AVD-K600P

SERVICE MANUAL

US Model
Canadian Model

Ver 1.1 2004.02

AVD-K600P is the amplifier, DVD/VIDEO player and tuner section in HT-V600DP.

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DVD	Model Name Using Similar Mechanism	NEW
	Mechanism Type	DP-7C
	Optical Pick-up Name	PVR-502W
VCR	Mechanism Type	D35 (N)

SPECIFICATIONS

General

Power requirements	AC 120V, 60 Hz
Power consumption	74W
Dimensions (approx.)	430 x 97 x 386 mm (17 x 3 7/8 x 15 1/4 inches) (W x H x D)
Mass (approx.)	6.3 kg (13.15 lbs)
Operating temperature	5°C to 35°C (41°F to 95°F)
Operating humidity	5 % to 90 %
Signal system	NTSC

DVD Section

Laser system	Semiconductor laser, wavelength 650 nm
Frequency response	DVD (PCM 48 kHz): 8 Hz to 22 kHz, CD: 8 Hz to 20 kHz
Signal-to-noise ratio	More than 80 dB (AUDIO OUT jacks)
Harmonic distortion	Less than 0.3%
Dynamic range	More than 85 dB (AUDIO OUT jacks)

Inputs

ANTENNA IN	Antenna or CATV input, 75 ohms
VIDEO IN	1 Vp-p 75 ohms, sync negative, RCA jack x 1
AUDIO IN	-6.0 dBm more than 47 kohms, RCA jack (L, R) x 1
FM ANTENNA IN	FM antenna input, 300 ohms
AM ANTENNA IN	AM antenna input, 300 ohms
OPTICAL IN	Optical connector x 1

Outputs

VIDEO OUT	1 Vp-p 75 ohms, sync negative
S VIDEO OUT	(Y) 1.0 V (p-p), 75 ohms, negative sync, Mini DIN 4-pin x 1 (C) 0.286 V (p-p) 75 ohms
COMPONENT VIDEO OUT	(Y) 1.0 V (p-p), 75 ohms, negative sync, RCA jack x 1 (P_B/C_B)/(P_R/C_R) 0.7 V (p-p), 75 ohms, RCA jack x 2
Audio output (analog audio)	2.0 Vrms (1 KHz, 0 dB), 330 ohms, RCA jack (L, R) x 1
ANTENNA OUT	Channel 3 or 4 (Switchable)

VIDEO Section

Head system	4 heads helical scan azimuth system
Timer	12-hour display type with AM, PM
Tape speed	SP: 33.35 mm/sec, EP: 11.12 mm/sec
Tape width	12.7 mm
Maximum recording time	SP: 2 HOURS (T-120), EP: 6 HOURS (T-120)/8 HOURS (T-160)
Rewind time	About 150 seconds (T-120)
Antenna	75 ohms (VHF/UHF)
Channel coverage	VHF: 2-13, UHF: 14-69, CATV: 1-125 (4A, A-W, W+1 - W+84, A-5 - A-1)
Frequency range	20Hz to 20kHz
Signal-to-noise ratio	More than 43dB
Dynamic range	More than 85 dB (AUDIO OUT jacks)
Channel separation	More than 55 dB (AUDIO OUT jacks)

— Continued on next page —

DVD/VCR RECEIVER HOME THEATER SYSTEM

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Home Audio Company
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SECTION 3
ELECTRICAL ADJUSTMENT

3-1. VCR SECTION ELECTRICAL ADJUSTMENT

1. Servo Adjustment

1) PG Adjustment

• Test Equipment
  a) OSCILLOSCOPE
  b) NTSC MODEL : NTSC SP TEST TAPE

• Adjustment And Specification

MODE	MEASUREMENT POINT	ADJUSTMENT POINT	SPECIFICATION
PLAY	V.Out H/SW(W373, W374)	R/C TRK JIG KEY	6.5 ± 0.5H

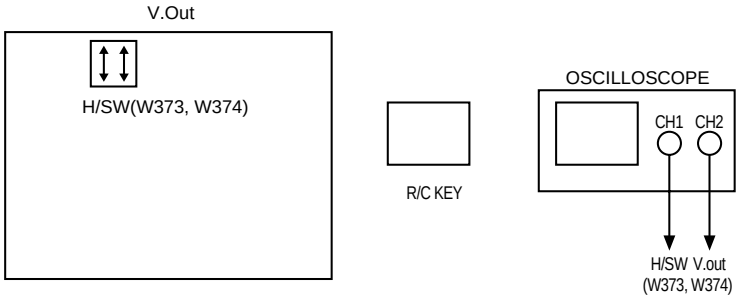
• Adjustment Procedure

a) Insert the SP Test Tape and play.
b) Connect the CH1 of the oscilloscope to the H/SW(W373, W374) and CH2 to the Video Out for the VCR.
c) Trigger the mixed Combo Video Signal of CH2 to the CH1 H/SW(W373, W374), and then check the distance (time difference), which is from the selected A(B) Head point of the H/SW(W373, W374) signal to the starting point of the vertical synchronized signal, to 6.5H ± 0.5H (412µs, 1H=63µs).
  Note - Press FRONT CH UP KEY and FRONT PLAY KEY on Deck playback, and it goes in to ATR PRESET. after the SP Test Tape is inserted.

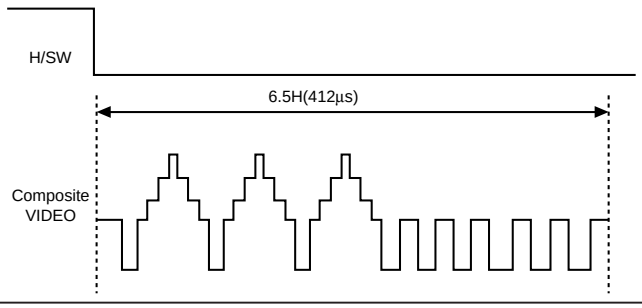
• PG Adjustment Method

a-1) Payback the SP standard tape
b-2) Press the “O” key on the Remote controller and the “PLAY” key on the Front Panel the same time, then it goes in to Tracking initial mode.
c-3) Repeat the above step(No.b-2), then it finishes the PG adjusting automatically.
d-4) Stop the playback, then it goes out to PG adjusting mode after mony the PG data.

• CONNECTION



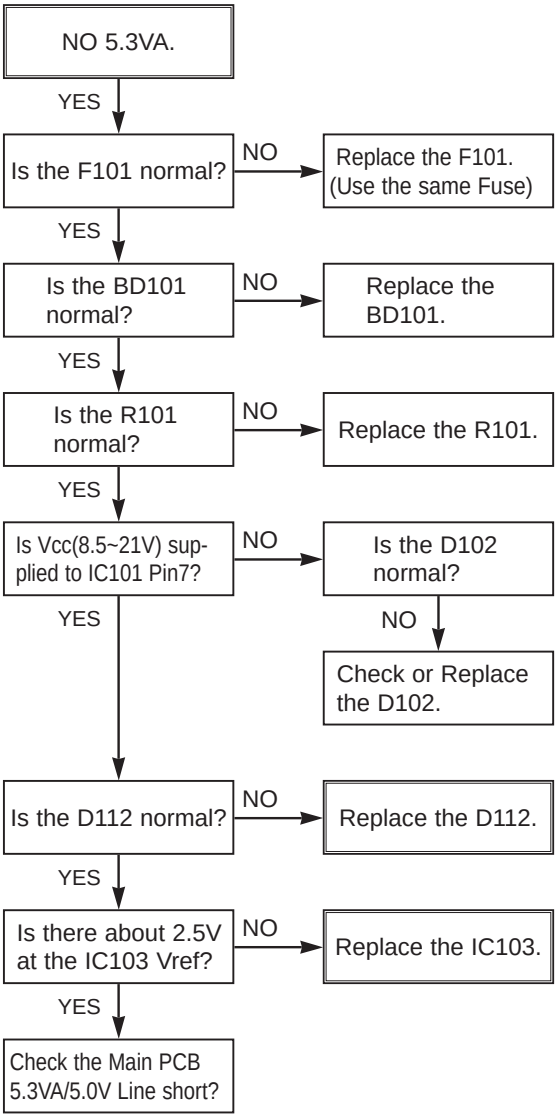
• WAVEFORM



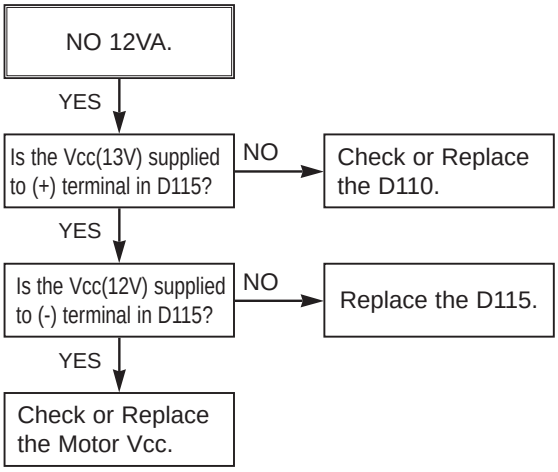
3-2. ELECTRICAL TROUBLESHOOTING GUIDE

1. Power (SMPS) CIRCUIT

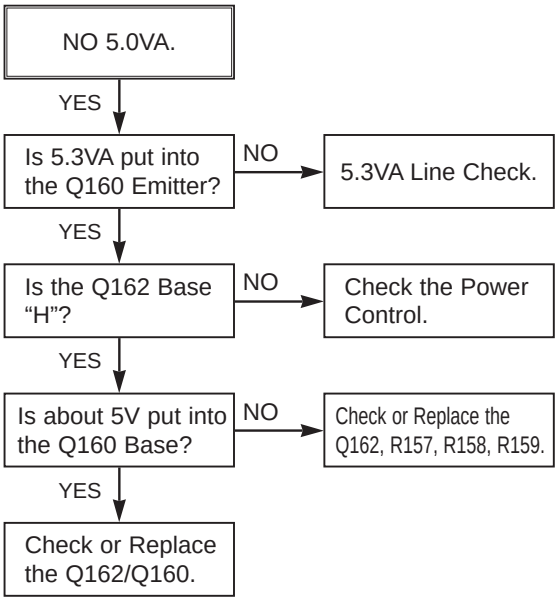
(1) No 5.3VA (SYS/Hi-Fi/TUNER)



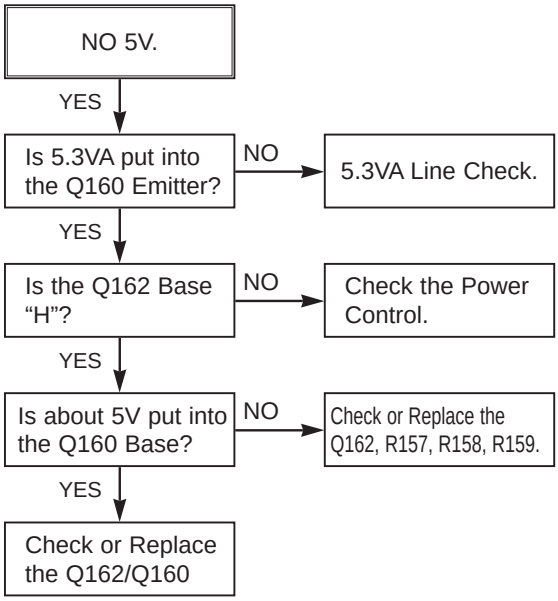
(2) No 12VA (TO CAP, DRUM MOTOR)



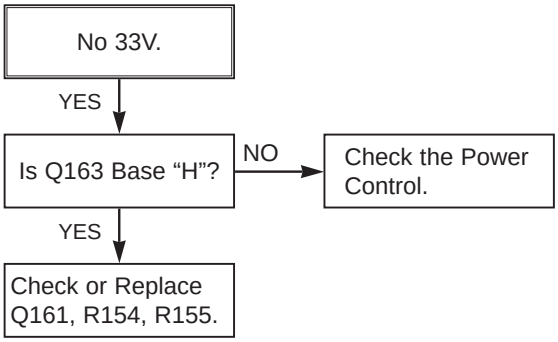
(3) No 5.0V (SYS/Hi-Fi/TUNER)



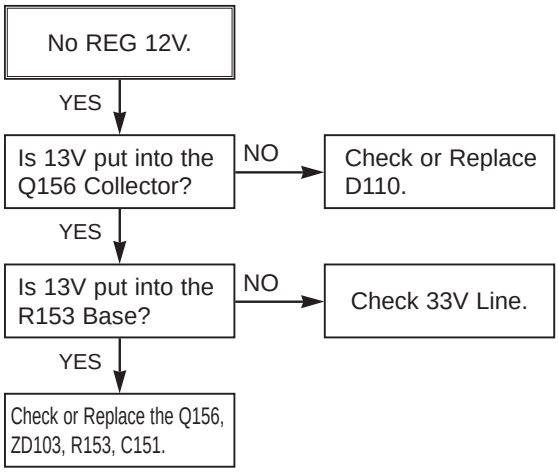
(4) No 5V (TO DVD)



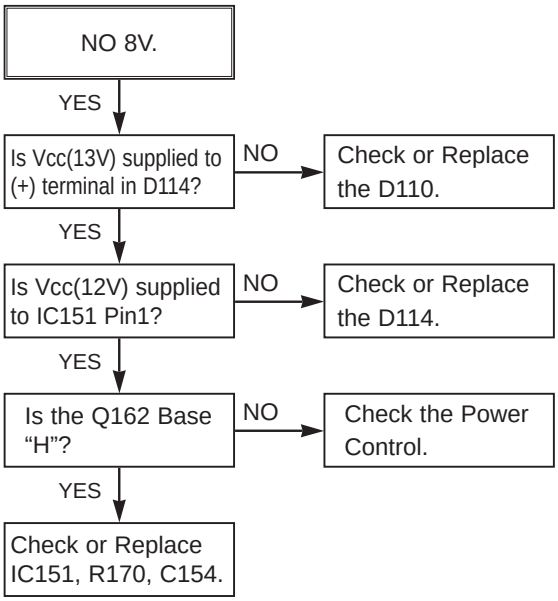
(5) No 33V (TUNER)



(6) No REG 12V

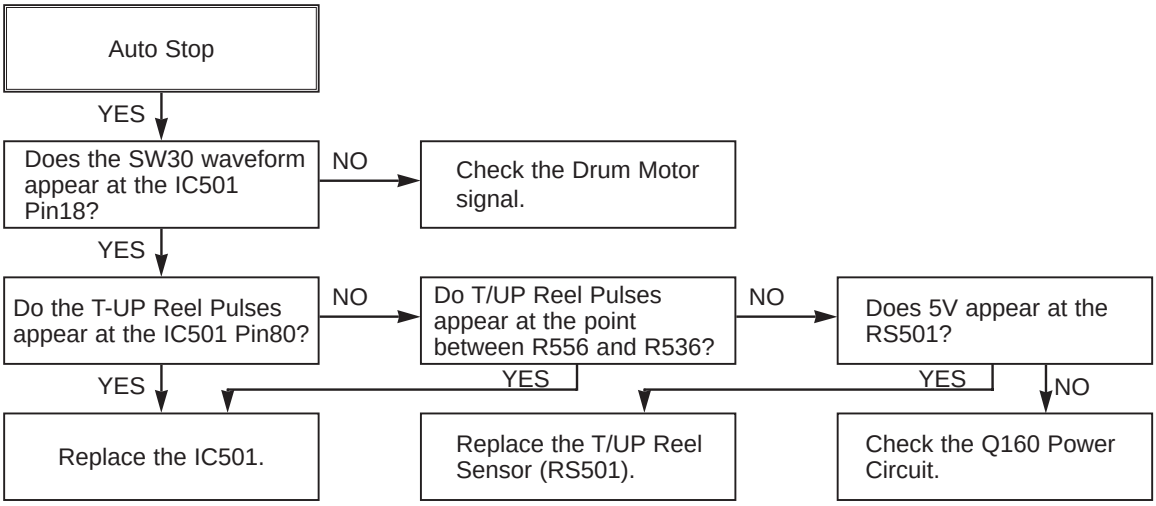


(7) No 8V(TO DVD)

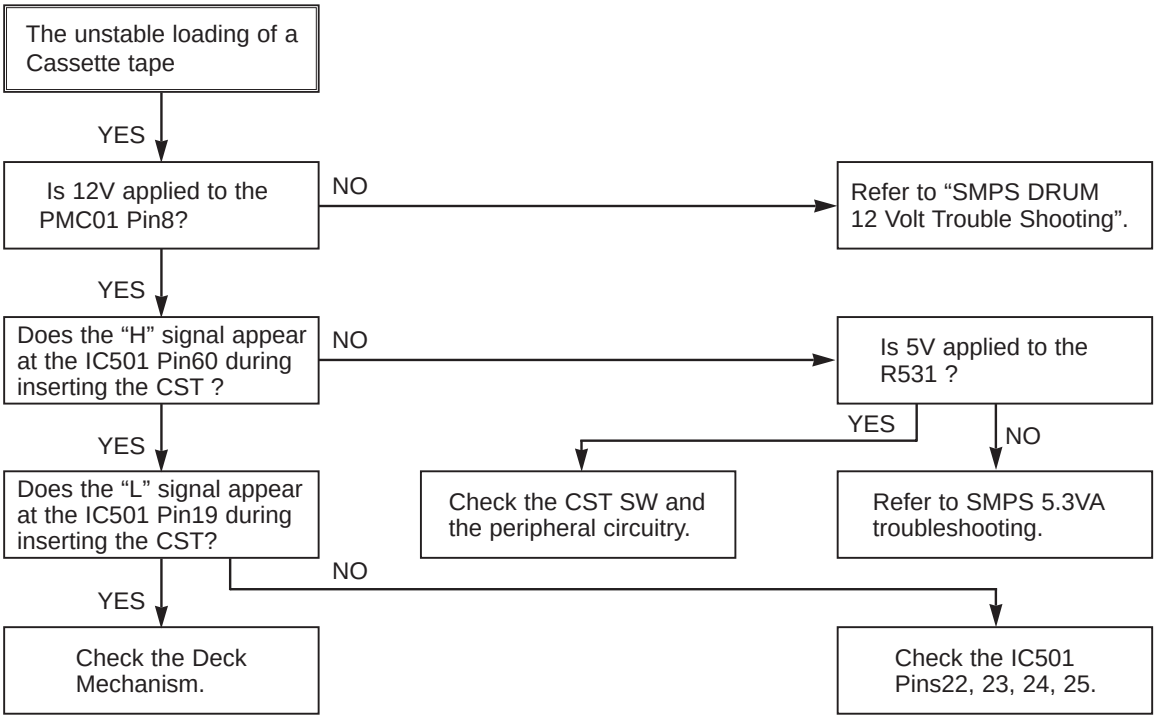


2. SYSTEM/KEY CIRCUIT

(1) AUTO STOP



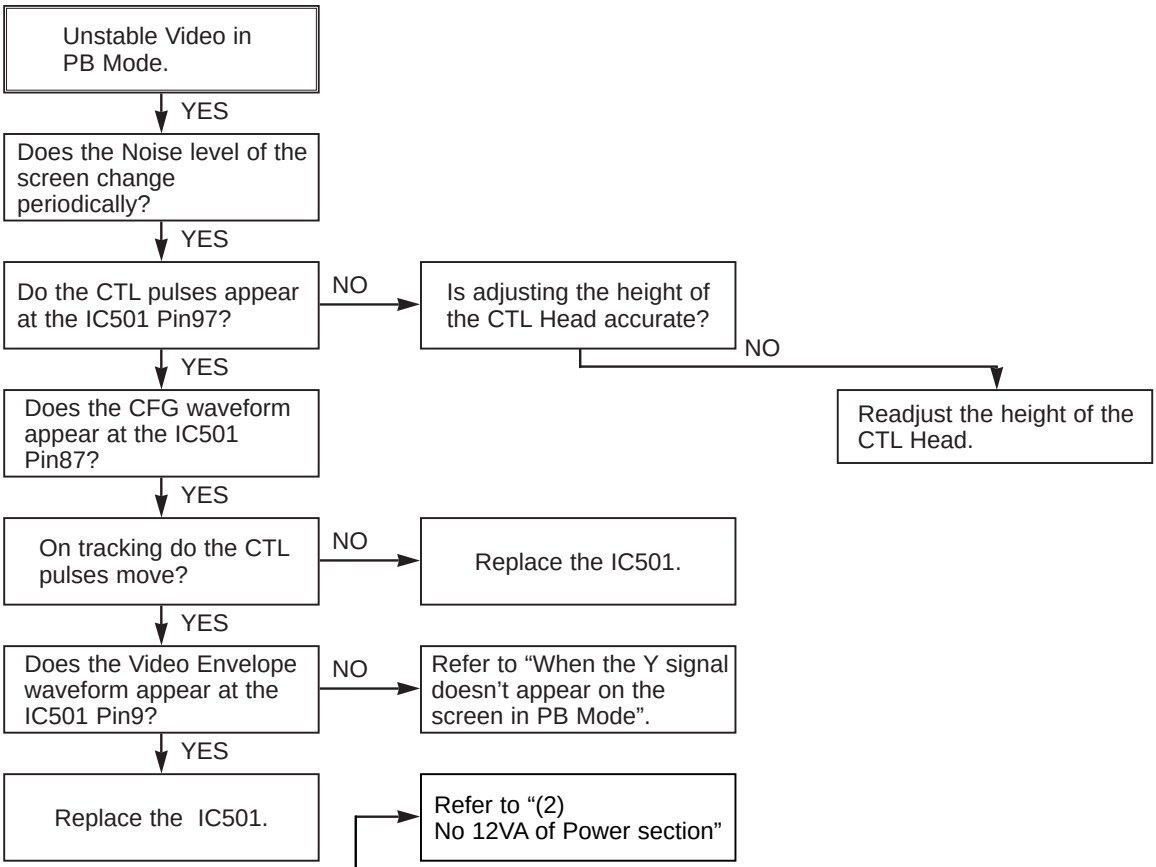
(2) The unstable loading of a Cassette tape


The unstable loading of a Cassette tape
YES
Is 12V applied to the PMC01 Pin8?
NO
Refer to “SMPS DRUM 12 Volt Trouble Shooting”.
YES
Does the “H” signal appear at the IC501 Pin60 during inserting the CST ?
NO
Is 5V applied to the R531 ?
YES
NO
YES
Does the “L” signal appear at the IC501 Pin19 during inserting the CST?
Check the CST SW and the peripheral circuitry.
Refer to SMPS 5.3VA troubleshooting.
NO
YES
Check the Deck Mechanism.
Check the IC501 Pins22, 23, 24, 25.

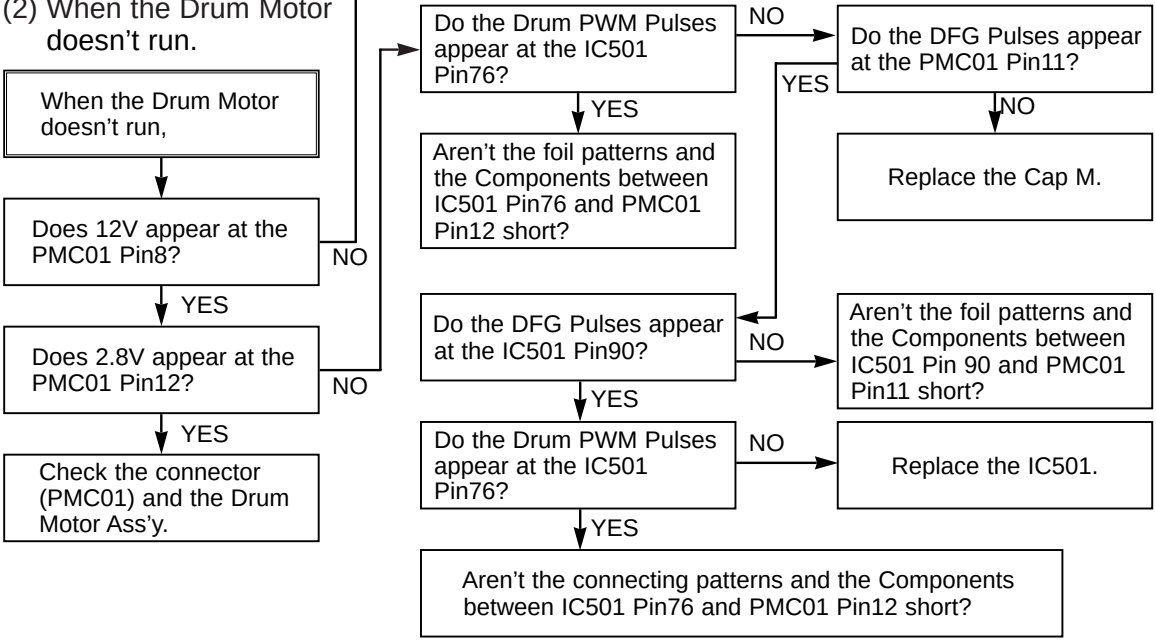
Caution : Auto stop can occur because Grease or Oil is dried up

3. SERVO CIRCUIT

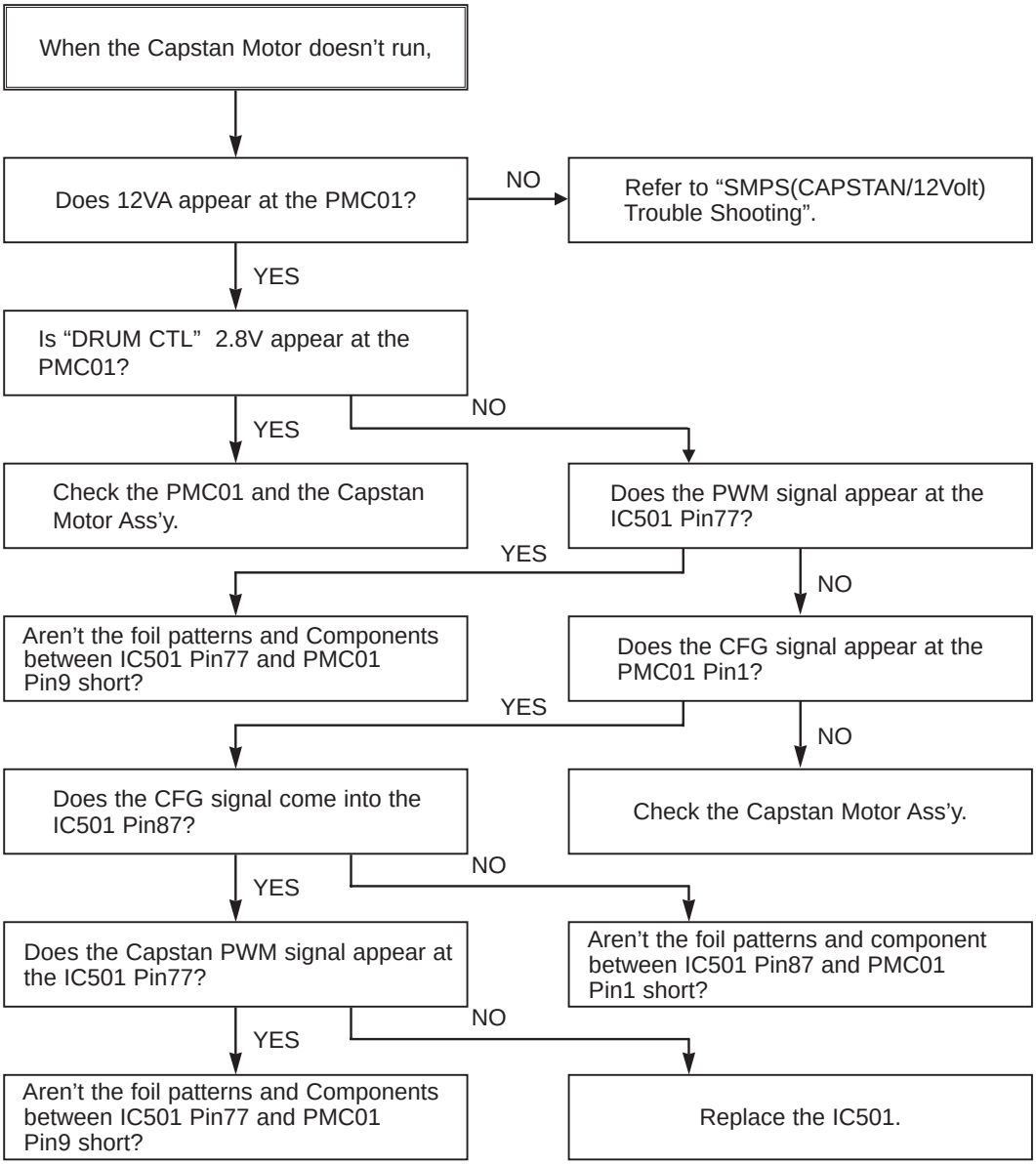
(1) Unstable Video in PB MODE


Unstable Video in PB Mode.
YES
Does the Noise level of the screen change periodically?
YES
Do the CTL pulses appear at the IC501 Pin97?
NO
Is adjusting the height of the CTL Head accurate?
NO
Readjust the height of the CTL Head.
YES
Does the CFG waveform appear at the IC501 Pin87?
YES
On tracking do the CTL pulses move?
NO
Replace the IC501.
YES
Does the Video Envelope waveform appear at the IC501 Pin9?
NO
Refer to "When the Y signal doesn't appear on the screen in PB Mode".
YES
Replace the IC501.

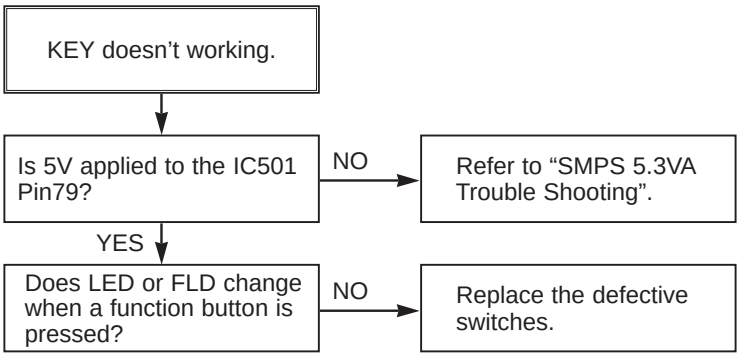
(2) When the Drum Motor doesn't run.


When the Drum Motor doesn't run,
Does 12V appear at the PMC01 Pin8?
NO
Refer to "(2) No 12VA of Power section"
YES
Does 2.8V appear at the PMC01 Pin12?
NO
Do the Drum PWM Pulses appear at the IC501 Pin76?
NO
Do the DFG Pulses appear at the PMC01 Pin11?
YES
YES
NO
Aren't the foil patterns and the Components between IC501 Pin76 and PMC01 Pin12 short?
Replace the Cap M.
YES
Check the connector (PMC01) and the Drum Motor Ass'y.
Do the DFG Pulses appear at the IC501 Pin90?
NO
Aren't the foil patterns and the Components between IC501 Pin 90 and PMC01 Pin11 short?
YES
Do the Drum PWM Pulses appear at the IC501 Pin76?
NO
Replace the IC501.
YES
Aren't the connecting patterns and the Components between IC501 Pin76 and PMC01 Pin12 short?

(3) When the Capstan Motor doesn't run,

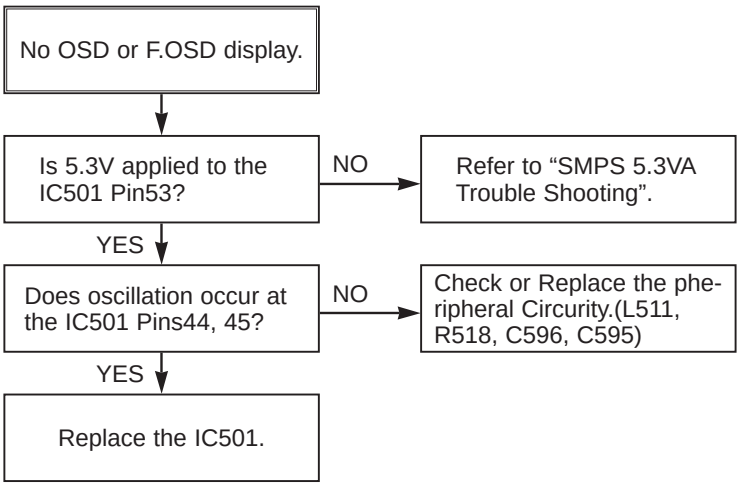

When the Capstan Motor doesn't run,
Does 12VA appear at the PMC01?
NO
Refer to "SMPS(CAPSTAN/12Volt) Trouble Shooting".
YES
Is "DRUM CTL" 2.8V appear at the PMC01?
NO
YES
Check the PMC01 and the Capstan Motor Ass'y.
Does the PWM signal appear at the IC501 Pin77?
YES
NO
Aren't the foil patterns and Components between IC501 Pin77 and PMC01 Pin9 short?
Does the CFG signal appear at the PMC01 Pin1?
YES
NO
Does the CFG signal come into the IC501 Pin87?
Check the Capstan Motor Ass'y.
NO
YES
Does the Capstan PWM signal appear at the IC501 Pin77?
Aren't the foil patterns and component between IC501 Pin87 and PMC01 Pin1 short?
NO
YES
Aren't the foil patterns and Components between IC501 Pin77 and PMC01 Pin9 short?
Replace the IC501.

(4) KEY doesn't working

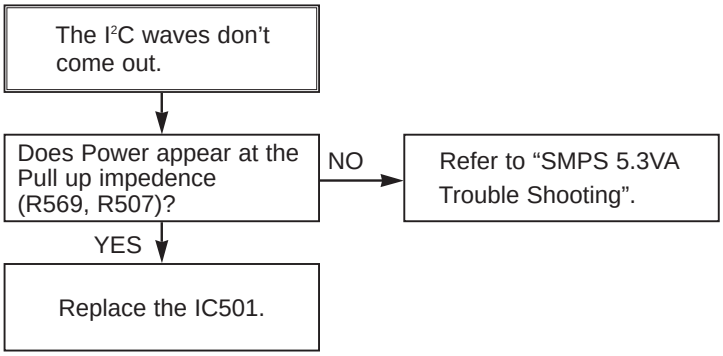

KEY doesn't working.
Is 5V applied to the IC501 Pin79?
NO
Refer to "SMPS 5.3VA Trouble Shooting".
YES
Does LED or FLD change when a function button is pressed?
NO
Replace the defective switches.

4. OSD CIRCUIT

(1) No OSD display.

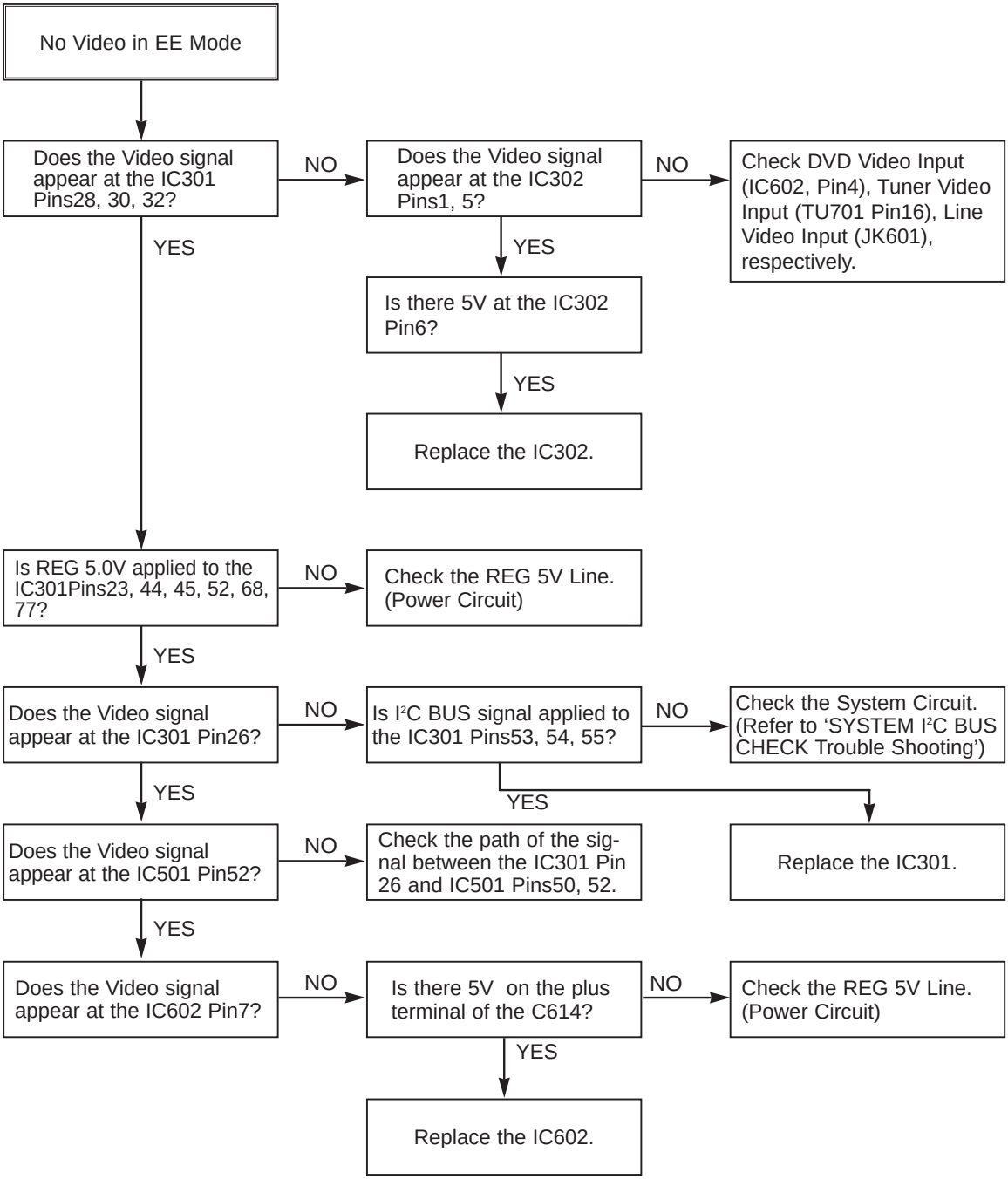

No OSD or F.OSD display.
Is 5.3V applied to the IC501 Pin53?
NO
Refer to "SMPS 5.3VA Trouble Shooting".
YES
Does oscillation occur at the IC501 Pins44, 45?
NO
Check or Replace the peripheral Circurity.(L511, R518, C596, C595)
YES
Replace the IC501.

(2) I^2C BUS CHECK

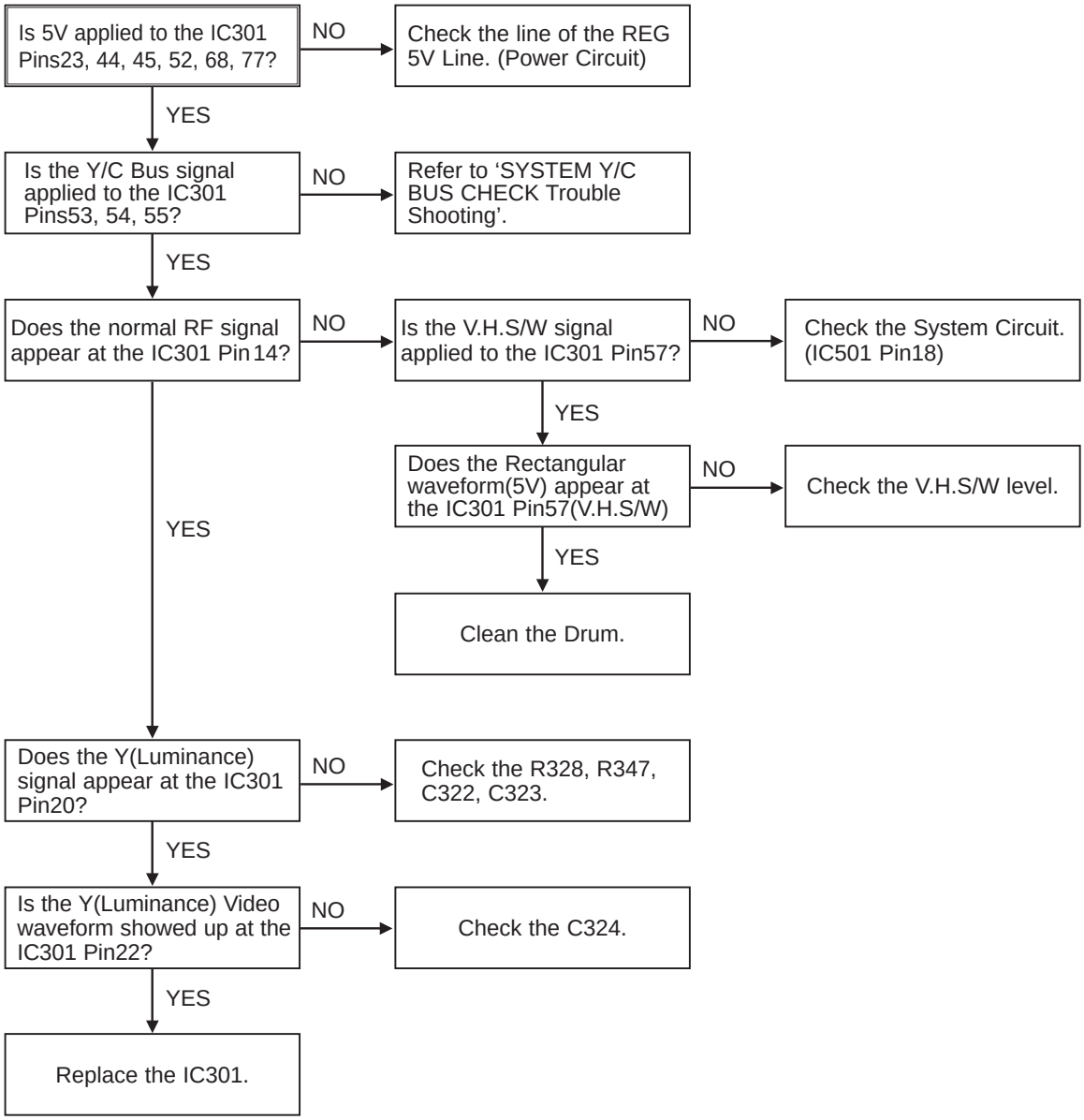

The I²C waves don't come out.
Does Power appear at the Pull up impedence (R569, R507)?
NO
Refer to "SMPS 5.3VA Trouble Shooting".
YES
Replace the IC501.

5. Y/C CIRCUIT

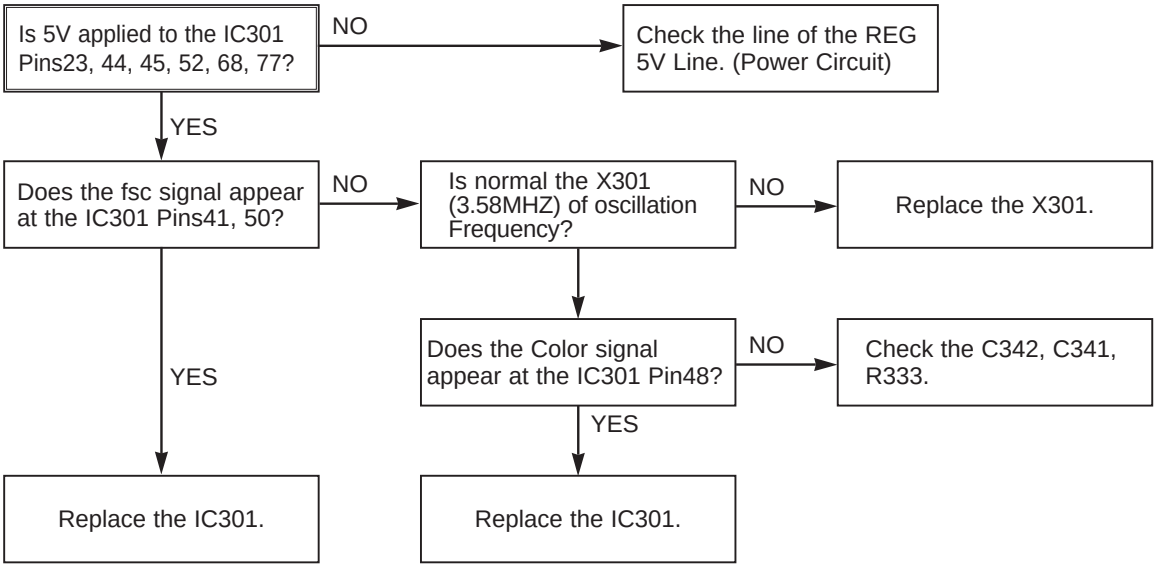
(1) No Video in EE Mode,


No Video in EE Mode
Does the Video signal appear at the IC301 Pins28, 30, 32?
NO
Does the Video signal appear at the IC302 Pins1, 5?
NO
Check DVD Video Input (IC602, Pin4), Tuner Video Input (TU701 Pin16), Line Video Input (JK601), respectively.
YES
YES
Is there 5V at the IC302 Pin6?
YES
Replace the IC302.
Is REG 5.0V applied to the IC301Pins23, 44, 45, 52, 68, 77?
NO
Check the REG 5V Line. (Power Circuit)
YES
Does the Video signal appear at the IC301 Pin26?
NO
Is I²C BUS signal applied to the IC301 Pins53, 54, 55?
NO
Check the System Circuit. (Refer to 'SYSTEM I²C BUS CHECK Trouble Shooting')
YES
YES
Does the Video signal appear at the IC501 Pin52?
NO
Check the path of the signal between the IC301 Pin 26 and IC501 Pins50, 52.
Replace the IC301.
YES
Does the Video signal appear at the IC602 Pin7?
NO
Is there 5V on the plus terminal of the C614?
NO
Check the REG 5V Line. (Power Circuit)
YES
Replace the IC602.

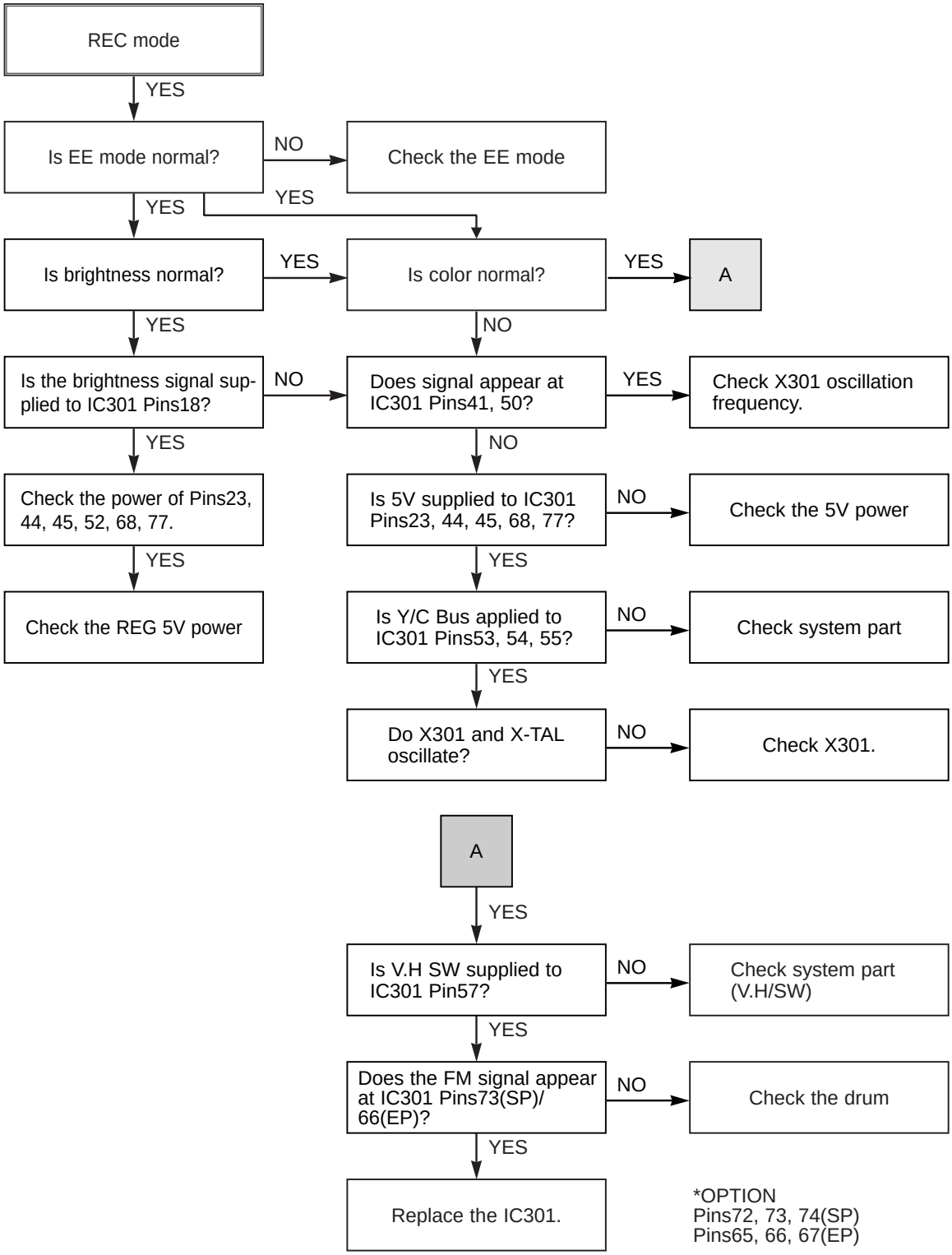
(2) When the Y(Luminance) signal doesn't appear on the screen in PB Mode,


Is 5V applied to the IC301 Pins23, 44, 45, 52, 68, 77?
NO
Check the line of the REG 5V Line. (Power Circuit)
YES
Is the Y/C Bus signal applied to the IC301 Pins53, 54, 55?
NO
Refer to 'SYSTEM Y/C BUS CHECK Trouble Shooting'.
YES
Does the normal RF signal appear at the IC301 Pin 14?
NO
Is the V.H.S/W signal applied to the IC301 Pin57?
NO
Check the System Circuit. (IC501 Pin18)
YES
Does the Rectangular waveform(5V) appear at the IC301 Pin57(V.H.S/W)
NO
Check the V.H.S/W level.
YES
Clean the Drum.
YES
Does the Y(Luminance) signal appear at the IC301 Pin20?
NO
Check the R328, R347, C322, C323.
YES
Is the Y(Luminance) Video waveform showed up at the IC301 Pin22?
NO
Check the C324.
YES
Replace the IC301.

(3) When the C(Color) signal doesn't appear on the screen in PB Mode,

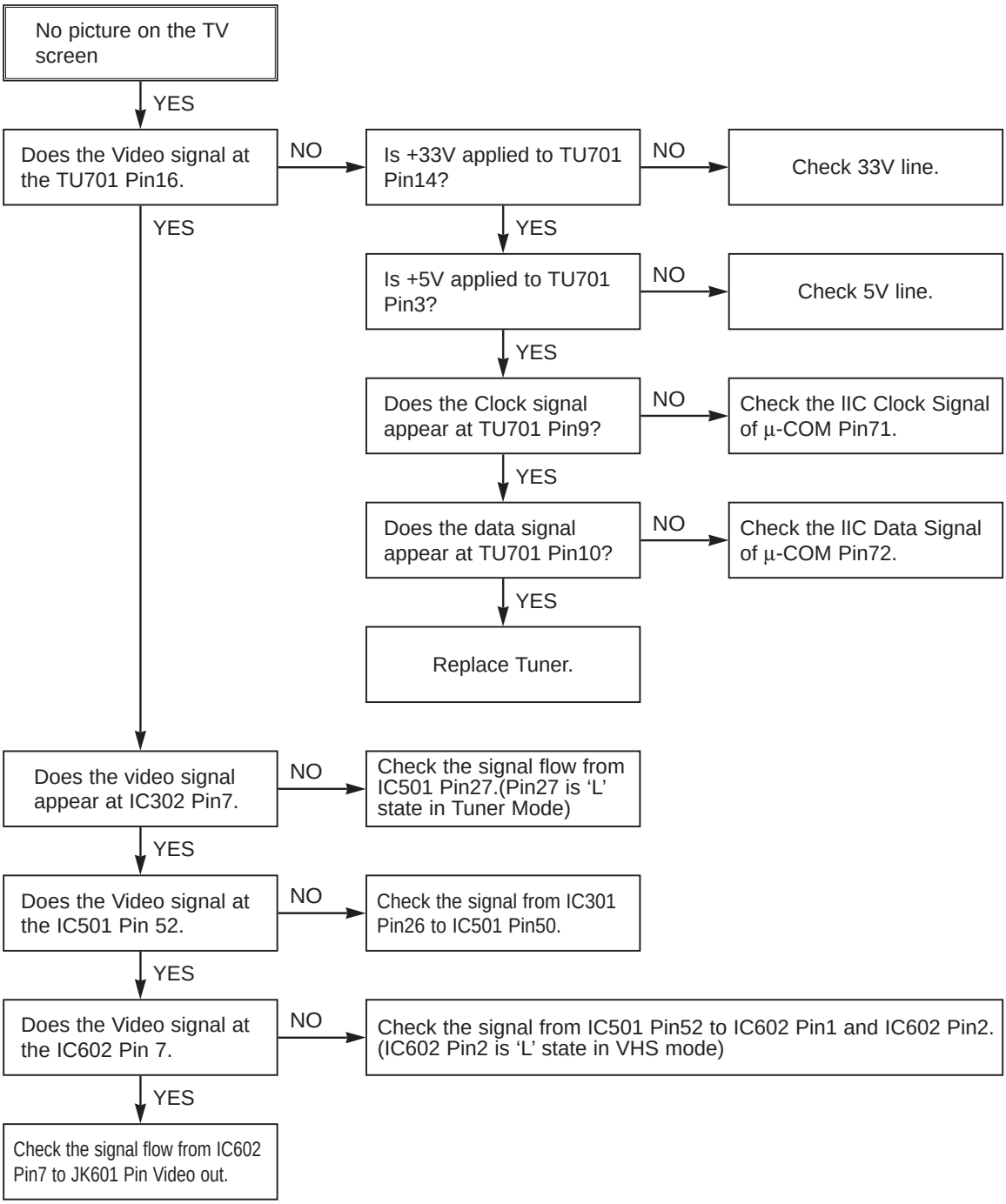

Is 5V applied to the IC301 Pins23, 44, 45, 52, 68, 77?
NO
Check the line of the REG 5V Line. (Power Circuit)
YES
Does the fsc signal appear at the IC301 Pins41, 50?
NO
Is normal the X301 (3.58MHZ) of oscillation Frequency?
NO
Replace the X301.
YES
Does the Color signal appear at the IC301 Pin48?
NO
Check the C342, C341, R333.
YES
Replace the IC301.
Replace the IC301.

(4) When the Video signal doesn't appear on the screen in REC Mode,

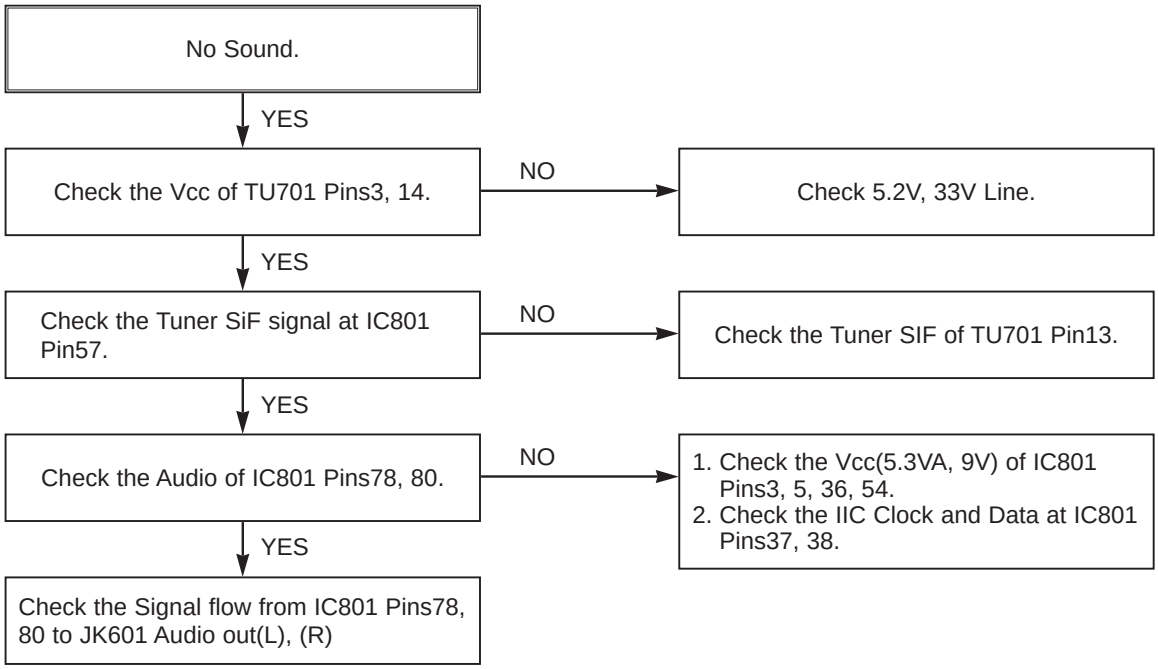


6. Tuner/IF CIRCUIT

(1) No Picture on the TV screen

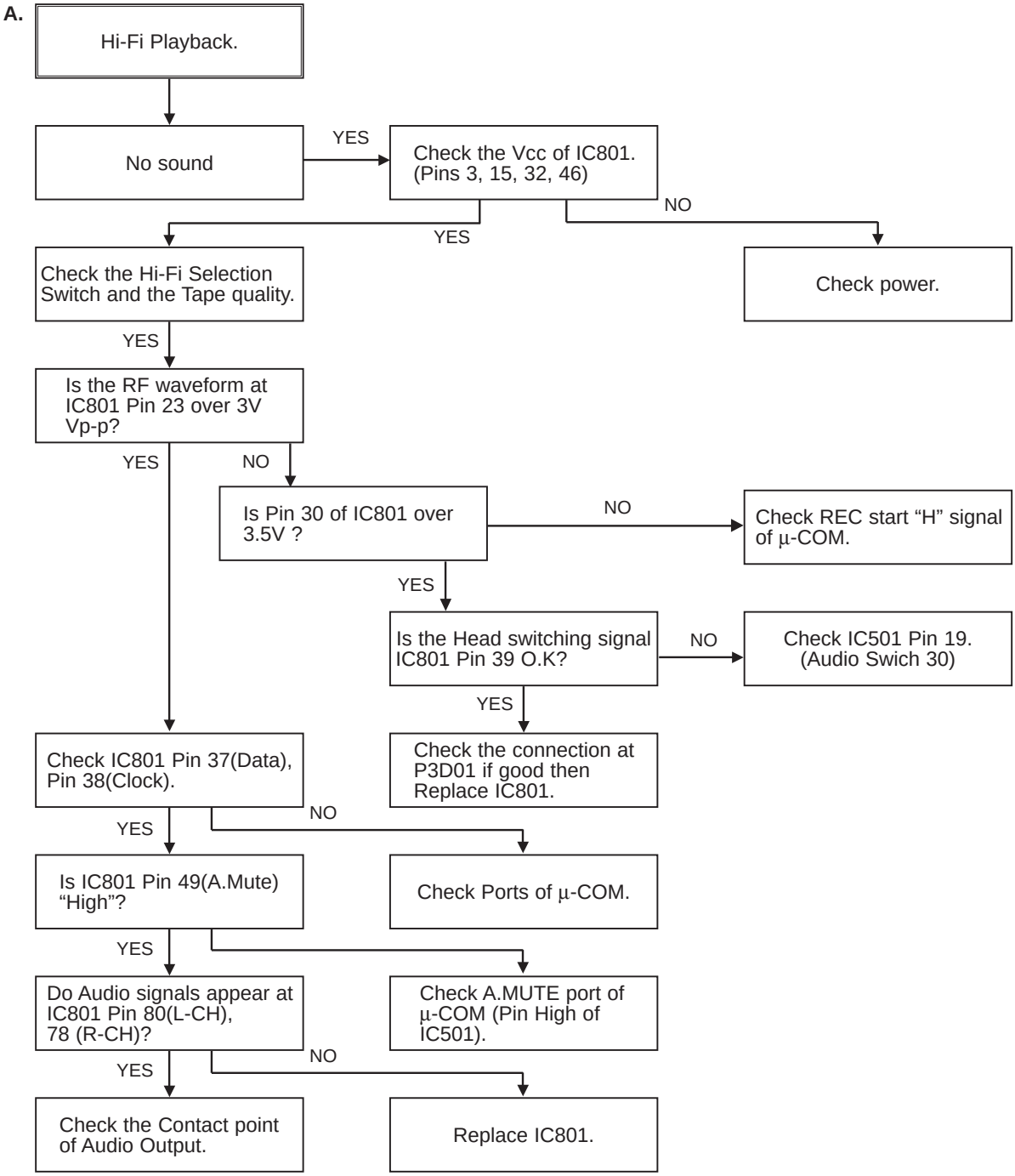

No picture on the TV screen
YES
Does the Video signal at the TU701 Pin16.
NO
Is +33V applied to TU701 Pin14?
NO
Check 33V line.
YES
YES
Is +5V applied to TU701 Pin3?
NO
Check 5V line.
YES
Does the Clock signal appear at TU701 Pin9?
NO
Check the IIC Clock Signal of µ-COM Pin71.
YES
Does the data signal appear at TU701 Pin10?
NO
Check the IIC Data Signal of µ-COM Pin72.
YES
Replace Tuner.
Does the video signal appear at IC302 Pin7.
NO
Check the signal flow from IC501 Pin27.(Pin27 is 'L' state in Tuner Mode)
YES
Does the Video signal at the IC501 Pin 52.
NO
Check the signal from IC301 Pin26 to IC501 Pin50.
YES
Does the Video signal at the IC602 Pin 7.
NO
Check the signal from IC501 Pin52 to IC602 Pin1 and IC602 Pin2. (IC602 Pin2 is 'L' state in VHS mode)
YES
Check the signal flow from IC602 Pin7 to JK601 Pin Video out.

(2) No Sound

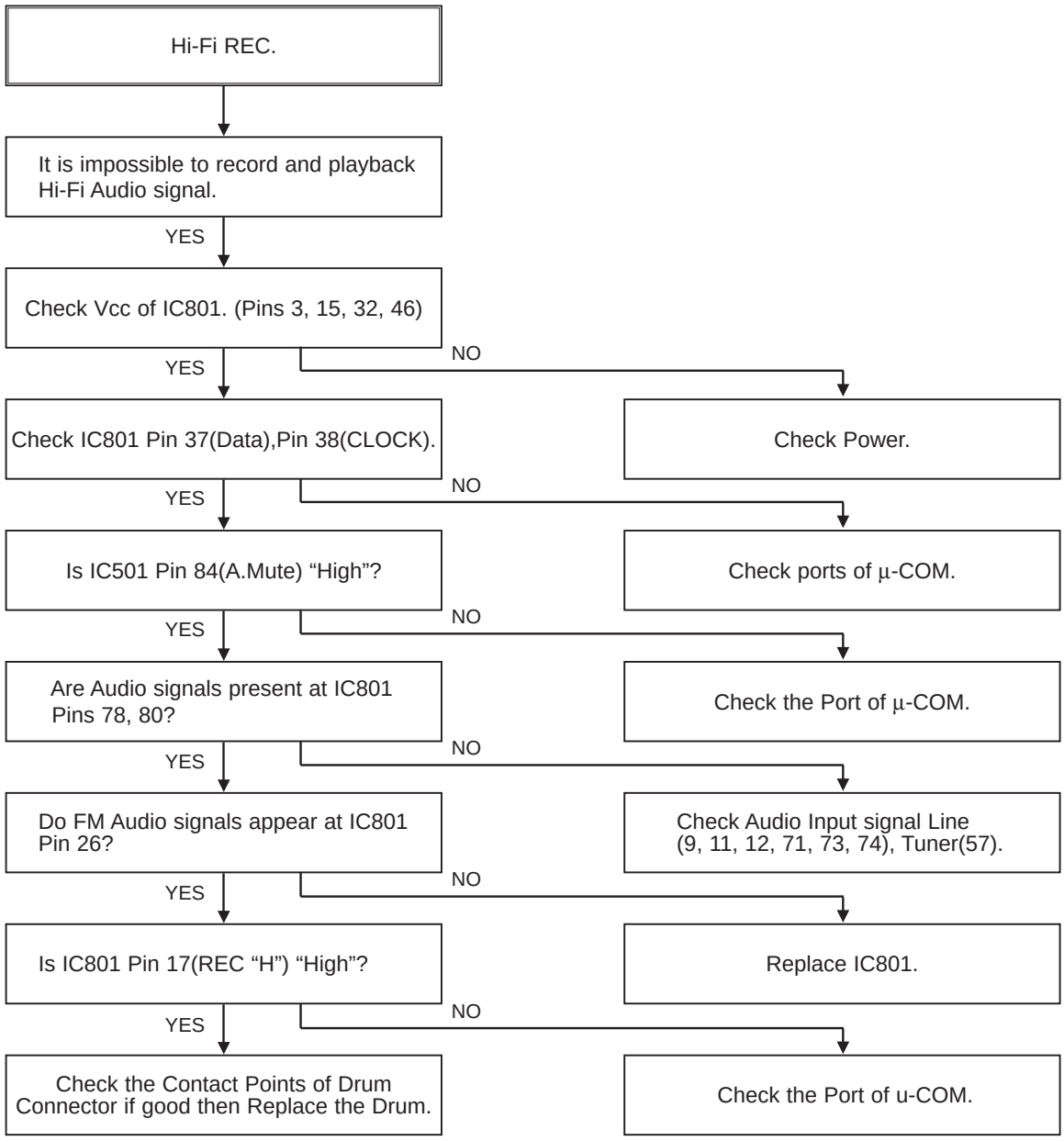

No Sound.
YES
Check the Vcc of TU701 Pins3, 14.
NO
Check 5.2V, 33V Line.
YES
Check the Tuner SiF signal at IC801 Pin57.
NO
Check the Tuner SIF of TU701 Pin13.
YES
Check the Audio of IC801 Pins78, 80.
NO
1. Check the Vcc(5.3VA, 9V) of IC801 Pins3, 5, 36, 54.
2. Check the IIC Clock and Data at IC801 Pins37, 38.
YES
Check the Signal flow from IC801 Pins78, 80 to JK601 Audio out(L), (R)

7. Hi-Fi Circuit

A.

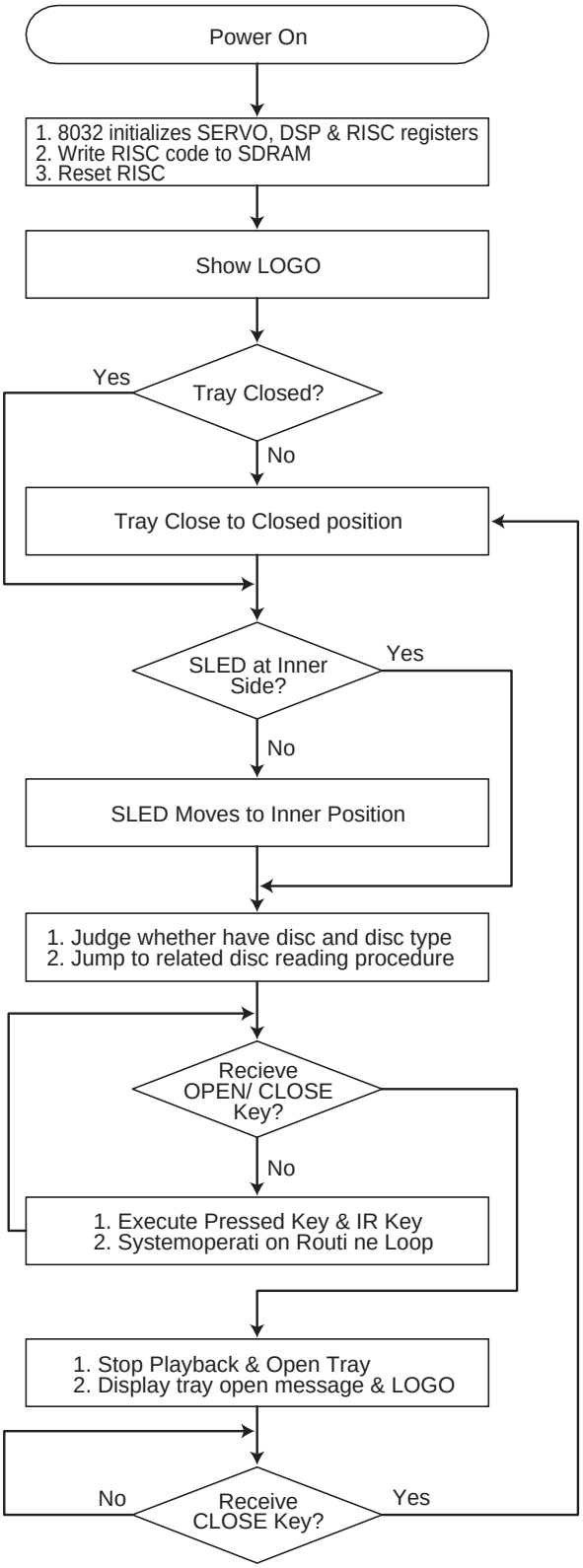

Hi-Fi Playback.
No sound
YES
Check the Vcc of IC801. (Pins 3, 15, 32, 46)
NO
YES
Check the Hi-Fi Selection Switch and the Tape quality.
Check power.
YES
Is the RF waveform at IC801 Pin 23 over 3V Vp-p?
YES
NO
Is Pin 30 of IC801 over 3.5V ?
NO
Check REC start “H” signal of µ-COM.
YES
Is the Head switching signal IC801 Pin 39 O.K?
NO
Check IC501 Pin 19. (Audio Swich 30)
YES
Check IC801 Pin 37(Data), Pin 38(Clock).
Check the connection at P3D01 if good then Replace IC801.
NO
YES
Is IC801 Pin 49(A.Mute) “High”?
Check Ports of µ-COM.
YES
Do Audio signals appear at IC801 Pin 80(L-CH), 78 (R-CH)?
Check A.MUTE port of µ-COM (Pin High of IC501).
NO
YES
Check the Contact point of Audio Output.
Replace IC801.

B.

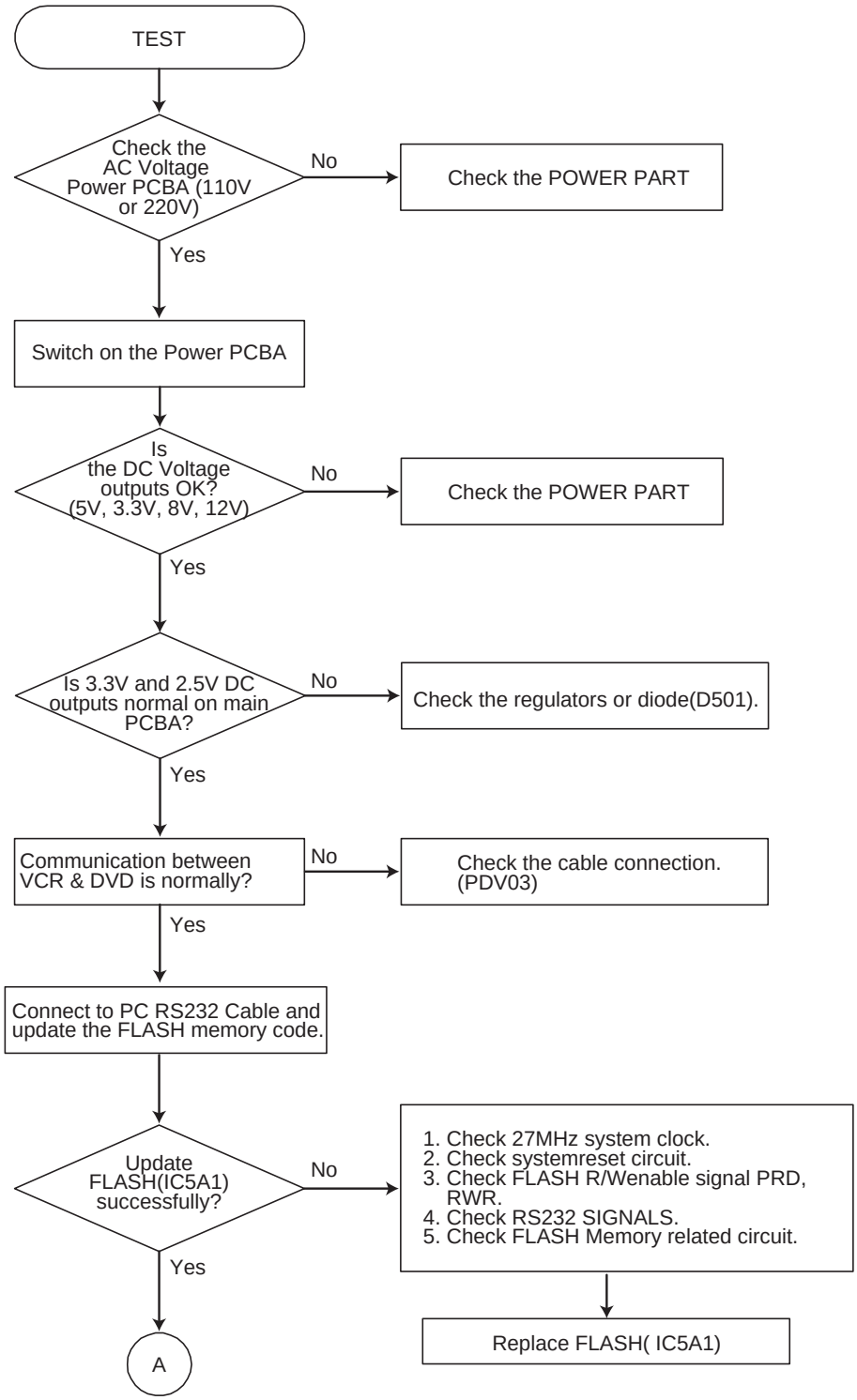

Hi-Fi REC.
It is impossible to record and playback Hi-Fi Audio signal.
YES
Check Vcc of IC801. (Pins 3, 15, 32, 46)
NO
YES
Check Power.
Check IC801 Pin 37(Data),Pin 38(CLOCK).
NO
YES
Check ports of µ-COM.
Is IC501 Pin 84(A.Mute) “High”?
NO
YES
Check the Port of µ-COM.
Are Audio signals present at IC801 Pins 78, 80?
NO
YES
Check Audio Input signal Line (9, 11, 12, 71, 73, 74), Tuner(57).
Do FM Audio signals appear at IC801 Pin 26?
NO
YES
Replace IC801.
Is IC801 Pin 17(REC “H”) “High”?
NO
YES
Check the Port of u-COM.
Check the Contact Points of Drum Connector if good then Replace the Drum.

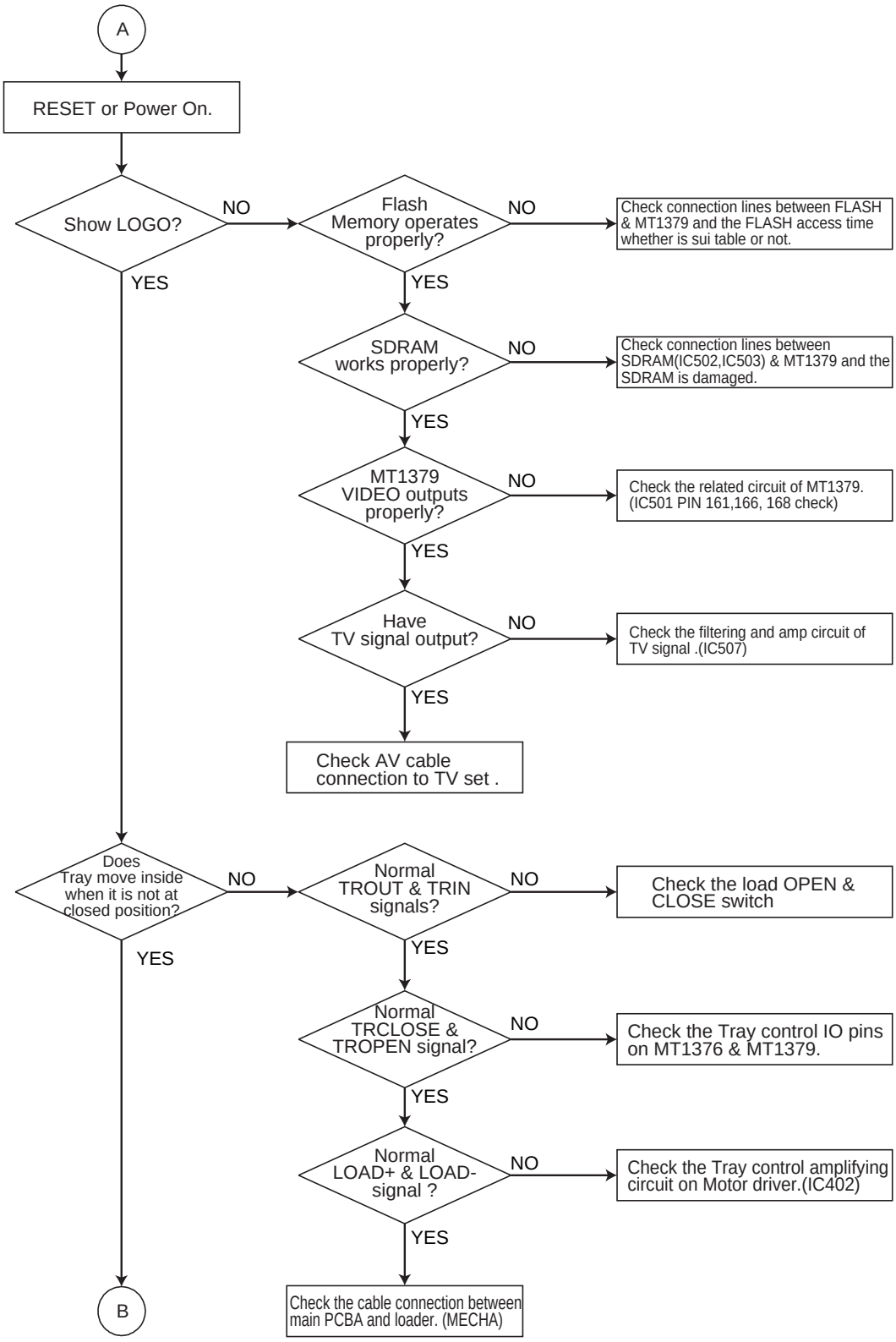
3-3. DVD & AMP SECTION ELECTRICAL TROUBLESHOOTING GUIDE

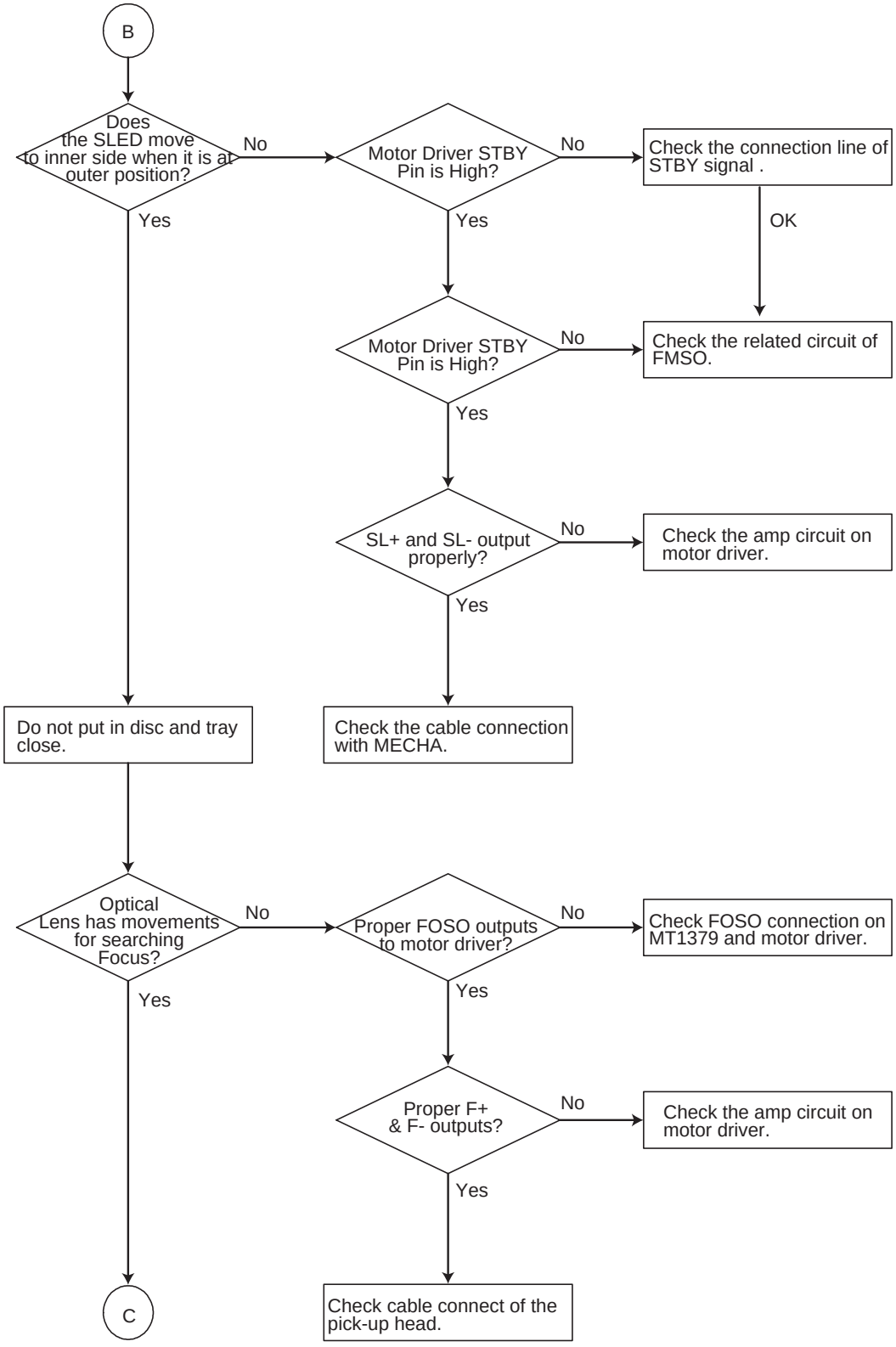
1. System operation flow

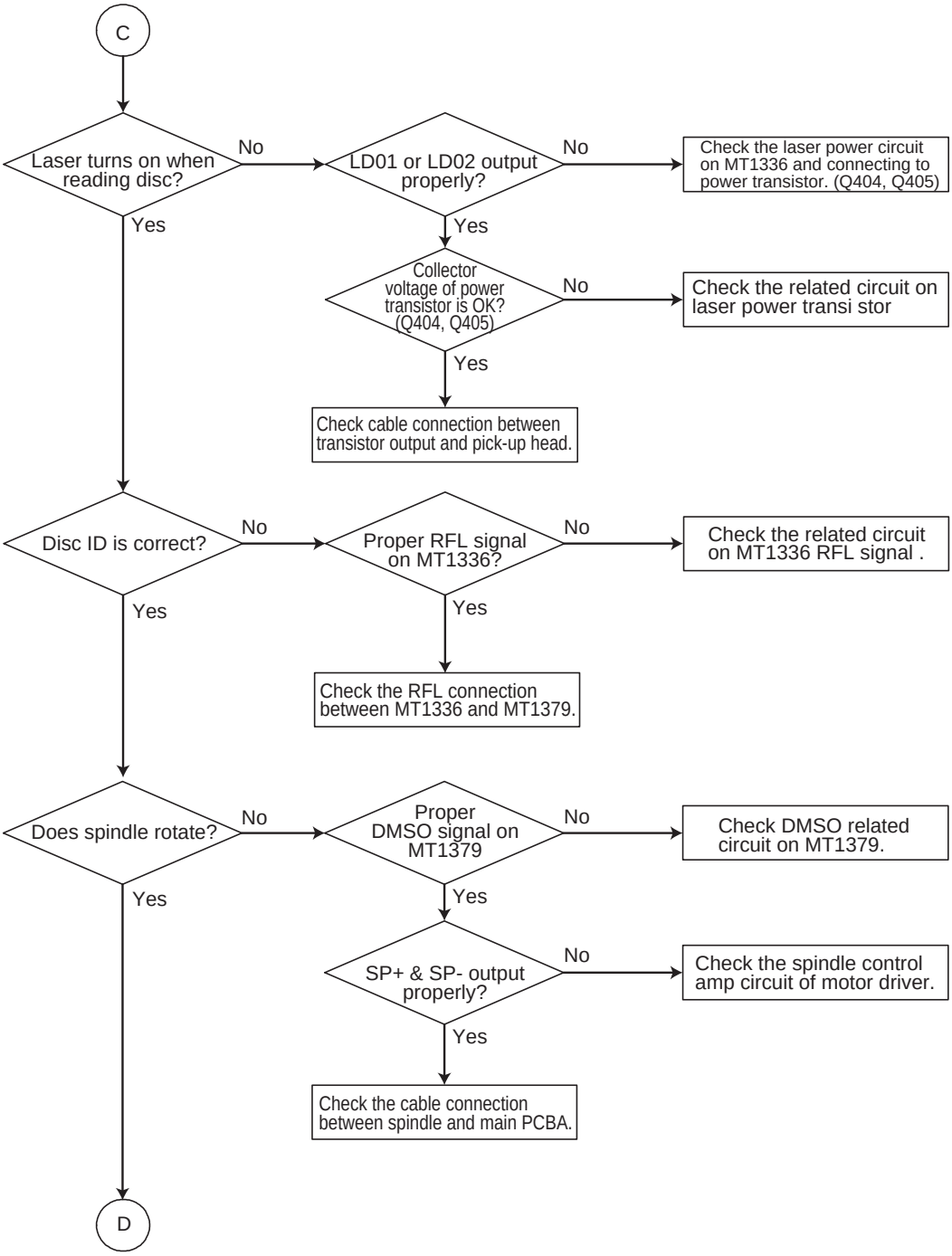


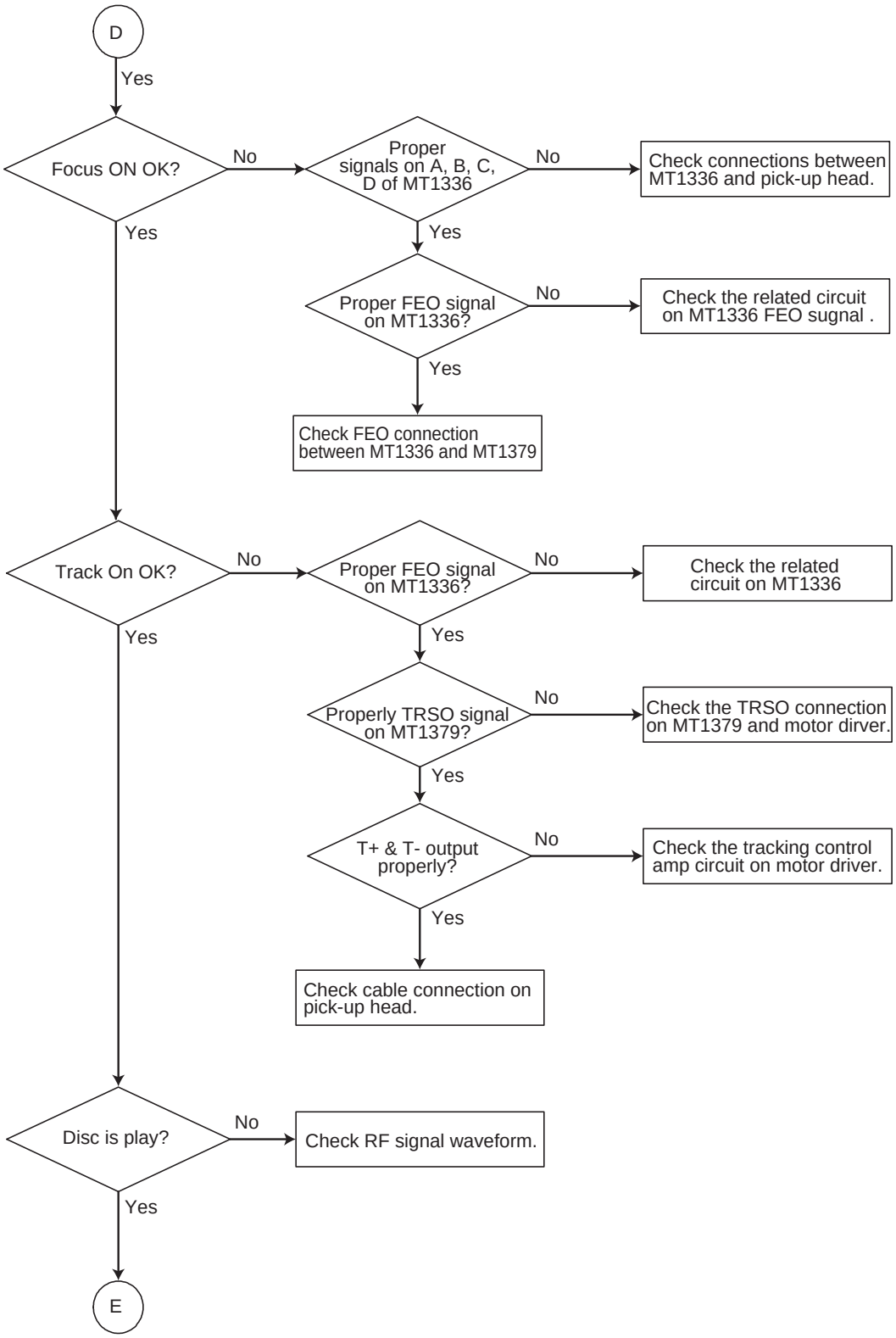
2. Test & debug flow

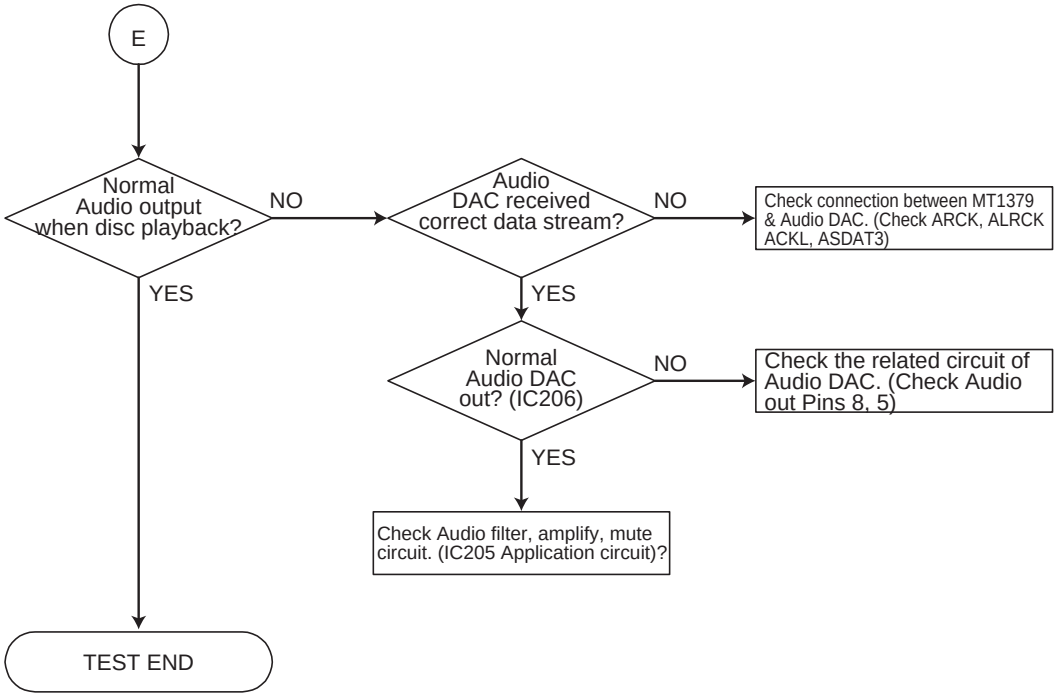



A
RESET or Power On.
Show LOGO?
NO
YES
Flash Memory operates properly?
NO
YES
Check connection lines between FLASH & MT1379 and the FLASH access time whether is sui table or not.
SDRAM works properly?
NO
YES
Check connection lines between SDRAM(IC502,IC503) & MT1379 and the SDRAM is damaged.
MT1379 VIDEO outputs properly?
NO
YES
Check the related circuit of MT1379. (IC501 PIN 161,166, 168 check)
Have TV signal output?
NO
YES
Check the filtering and amp circuit of TV signal .(IC507)
Check AV cable connection to TV set .
Does Tray move inside when it is not at closed position?
NO
YES
Normal TROUT & TRIN signals?
NO
YES
Check the load OPEN & CLOSE switch
Normal TRCLOSE & TROPEN signal?
NO
YES
Check the Tray control IO pins on MT1376 & MT1379.
Normal LOAD+ & LOAD- signal ?
NO
YES
Check the Tray control amplifying circuit on Motor driver.(IC402)
Check the cable connection between main PCBA and loader. (MECHA)
B

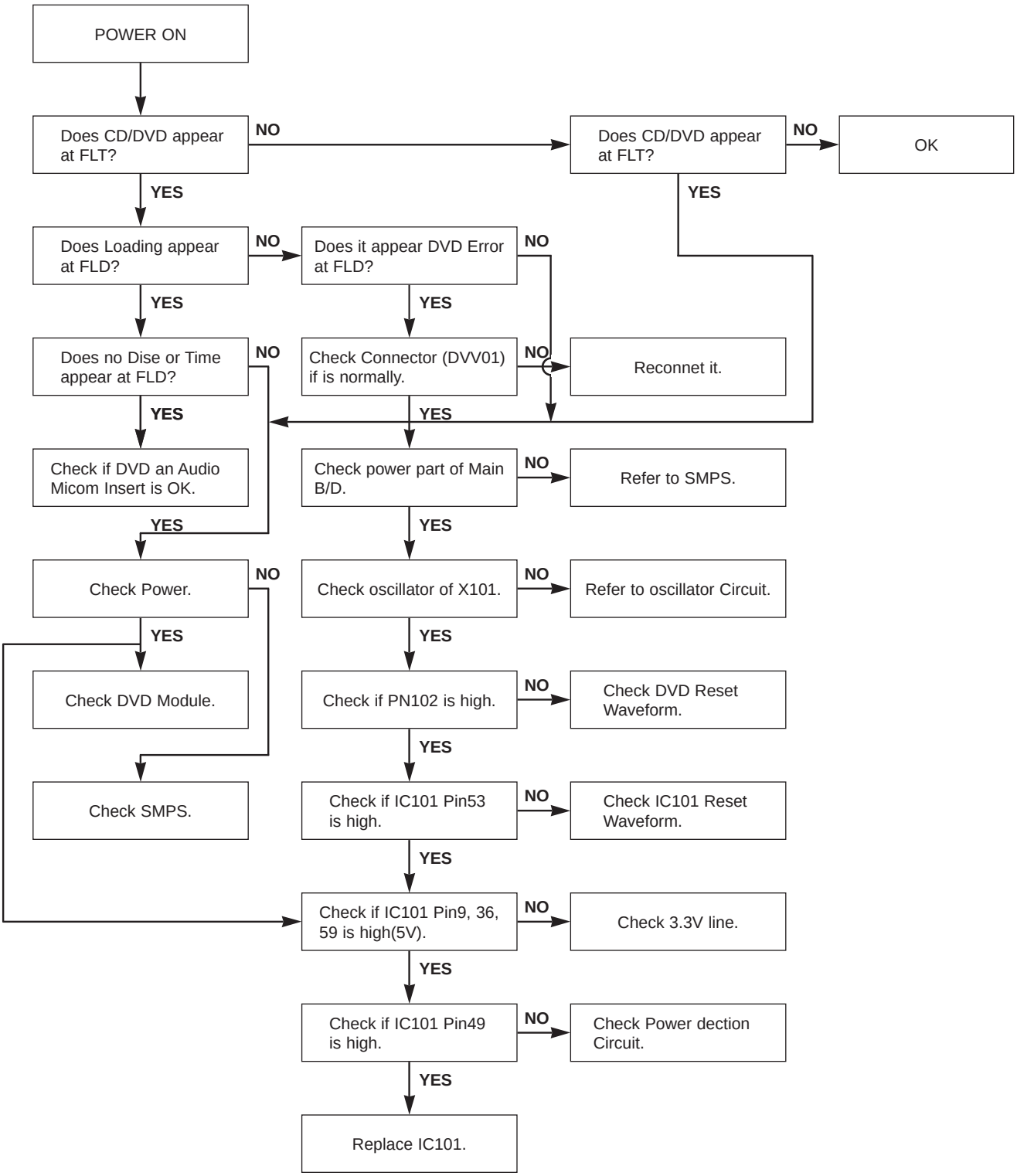

B
Does the SLED move to inner side when it is at outer position?
No
Yes
Motor Driver STBY Pin is High?
No
Yes
Check the connection line of STBY signal .
OK
Motor Driver STBY Pin is High?
No
Yes
Check the related circuit of FMSO.
SL+ and SL- output properly?
No
Yes
Check the amp circuit on motor driver.
Do not put in disc and tray close.
Check the cable connection with MECHA.
Optical Lens has movements for searching Focus?
No
Yes
Proper FOSO outputs to motor driver?
No
Yes
Check FOSO connection on MT1379 and motor driver.
Proper F+ & F- outputs?
No
Yes
Check the amp circuit on motor driver.
C
Check cable connect of the pick-up head.


C
Laser turns on when reading disc?
No
LD01 or LD02 output properly?
No
Check the laser power circuit on MT1336 and connecting to power transistor. (Q404, Q405)
Yes
Yes
Collector voltage of power transistor is OK? (Q404, Q405)
No
Check the related circuit on laser power transi stor
Yes
Check cable connection between transistor output and pick-up head.
Disc ID is correct?
No
Proper RFL signal on MT1336?
No
Check the related circuit on MT1336 RFL signal .
Yes
Yes
Check the RFL connection between MT1336 and MT1379.
Does spindle rotate?
No
Proper DMSO signal on MT1379
No
Check DMSO related circuit on MT1379.
Yes
Yes
SP+ & SP- output properly?
No
Check the spindle control amp circuit of motor driver.
Yes
Check the cable connection between spindle and main PCBA.
D


D
Yes
Focus ON OK?
No
Proper signals on A, B, C, D of MT1336
No
Check connections between MT1336 and pick-up head.
Yes
Yes
Proper FEO signal on MT1336?
No
Check the related circuit on MT1336 FEO sugnal .
Yes
Check FEO connection between MT1336 and MT1379
Track On OK?
No
Proper FEO signal on MT1336?
No
Check the related circuit on MT1336
Yes
Yes
Properly TRSO signal on MT1379?
No
Check the TRSO connection on MT1379 and motor dirver.
Yes
T+ & T- output properly?
No
Check the tracking control amp circuit on motor driver.
Yes
Check cable connection on pick-up head.
Disc is play?
No
Check RF signal waveform.
Yes
E


E
Normal Audio output when disc playback?
NO
Audio DAC received correct data stream?
NO
Check connection between MT1379 & Audio DAC. (Check ARCK, ALRCK ACKL, ASDAT3)
YES
YES
Normal Audio DAC out? (IC206)
NO
Check the related circuit of Audio DAC. (Check Audio out Pins 8, 5)
YES
Check Audio filter, amplify, mute circuit. (IC205 Application circuit)?
TEST END

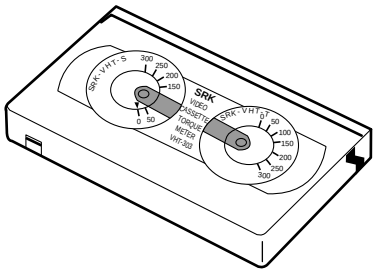
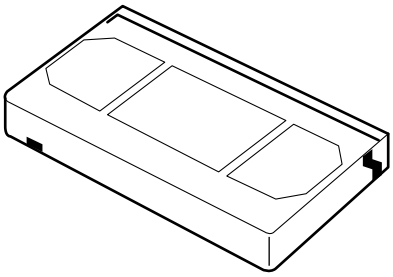
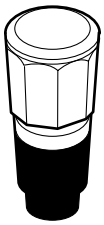
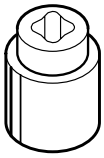
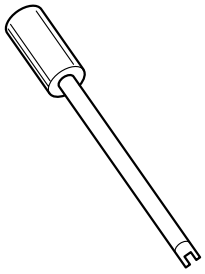
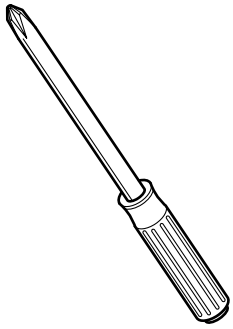
3. AUDIO μ-COM Circuit(DVD & AMP)



SECTION 4
MECHANICAL ADJUSTMENT

4-1. VIDEO MECHANISM DECK SECTION

• Tools and Fixfures for Service

1. Cassette Torque meter SRK-VHT-303(Not SVC part) 	2. Alignment tape (See figure below) 	3. Torque gauge 600g.Cm ATG 
4. Torque gauge adaptor 	5. Post height adjusting driver Parts No. : SV-TGO-030-000(SMALL) : SV-TGO-030-000(LARGE) 	6. + Type driver (ϕ 5) 

• Alignment Tapes for Adjustment

Derivation No.			A	B C	D
Mechanism / Adjustment Items			A	B C	D
		SP/LP 2/4 Head	SP 2 Head	SP/LP/EP 2/4 Head	SP 2 Head
FM Envelope		TTV-P2L	TTV-P2	TTV-N1 (TTV-N12)	TTV-N2
A/C Head	Slantness	A commecially available tape			
	Height	TTV-P1 (TTV-P1L)	TTV-P1	TTV-N1 (TTV-N12) (TTV-N1E)	TTV-N1 (TTV-N12)
	Azimuth	TTV-P1	TTV-P2	TTV-N2	TTV-N2
X-value		TTV-P2 (TTV-P2L)	TTV-P2	TTV-N2 TTV-N2E TTV-N12	TTV-N2
RG Post Inclination		A commecially available tape			
Tape Back Tension		SRK-VHT-303			

The numbers in ( ) parenthesis can be used as the substiture.

1. Mechanism Alignment Position Check

Purpose:To determine if the Mechanism is in the correct position, when a Tape is ejected.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Check Point
• Blank tape	• Eject Mode (with Cassette ejected)	• Mechanism and Mode Switch Position

1) Turn the Power S/W on and eject the Cassette by pressing the Eject Button.
2) Remove the Top Cover and Plate Assembly Top, visually check if the Gear Cam Hole is aligned with the Chassis Hole as below Fig. C-2.
3) IF not, rotate the Shaft of the Loading Motor to either clockwise or counterclockwise until the alignment is as below Fig. C-2.
4) Remove the Screw which fixes the Deck Mechanism and Main Frame and confirm if the Gear Cam is aligned with the Gear Drive as below Fig. C-1(A).
5) Confirm if the Mode S/W on the Main P.C.Board is aligned as below Fig. C-1(B).
6) Remount the Deck Mechanism on the Main P.C.Board and check each operation.

CHECK DIAGRAM

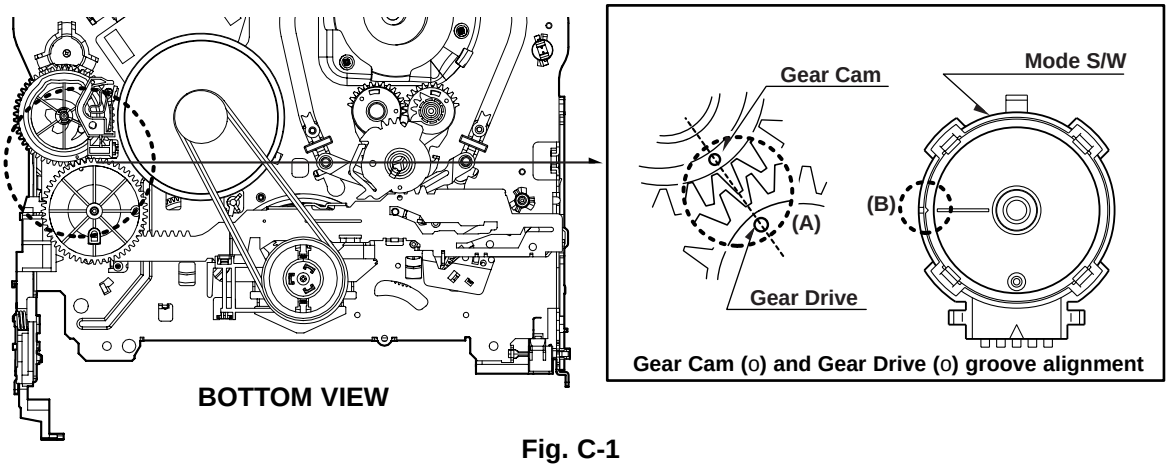


Fig. C-1

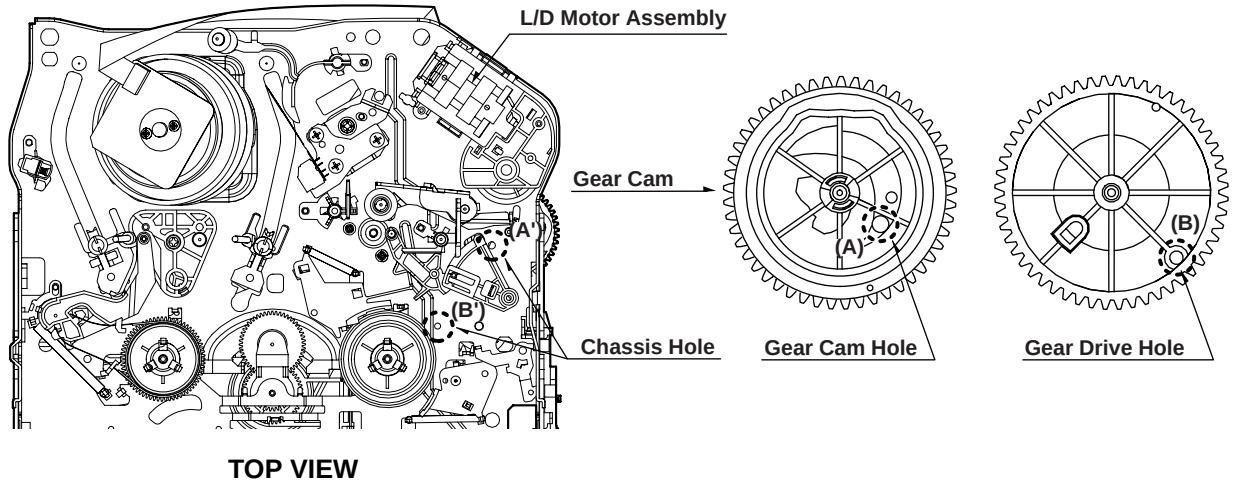


Fig. C-2

2. Preparation for Adjustment (To set the Deck Mechanism of the loading state without inserting a cassette tape).

1) Unplug the power cord from the AC outlet.
2) Disassemble the Top Cover and Plate Assembly Top.
3) Plug the power cord into the AC outlet.
4) Turn the power S/W on and push the Lever Stopper of the Holder Assembly CST to the back for loading the cassette without tape.
Cover the holes of the End Sensors at the both sides of the Chassis to prevent a light leak.
Then the Deck Mechanism drives to the Stop Mode.
In this case, the Deck Mechanism can accept inputs of each mode, however the Rewind and Review operation can not be performed for more than a few seconds because the Take-up Reel Table is in the Stop State and can not be detected the Reel Pulses.

3. Checking Torque

Purpose: To insure smooth transport of the tape during each mode of operation.
If the tape transport is abnormal, then check the torque as indicated by the chart below.

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Checking Method
• Torque Gauge(600g/cm ATG) • Torque Gauge Adaptor • Cassette Torque Meter SRK-VHT-303	• Play (FF) or Review (REW) Mode	• Perform each Deck Mechanism mode without inserting a cassette tape(Refer to above No.2 Preparation for Adjustment). • Read the measurement of the Take-up or Supply Reels on the Cassette Torque Meter(Fig. C-3-2). • Attach the Torque Gauge Adaptor to the Torque Gauge and then read the value of it(Fig. C-3-1).

Item	Mode	Test Equipment	Measurement Reel	Measurement Values
Fast Forward Torque	Fast Forward	Cassette Torque Gauge	Take-Up Reel	More than 400g/cm
Rewind Torque	Rewind	Cassette Torque Gauge	Supply Reel	More than 400g/cm
Play Take-Up Torque	Play	Cassette Torque Meter	Take-Up Reel	40~100g/cm
Review Torque	Review	Cassette Torque Meter	Supply Reel	120~210g/cm

NOTE:

The values are measured by using a Torque Gauge and Torque Gauge Adaptor with the Torque Gauge affixed.

NOTE:

The torque reading to measure occurs when the tape abruptly changes direction from Fast Forward to Rewind Mode, when quick braking is applied to both Reels.

• Torque Gauge (600g.cm ATG)

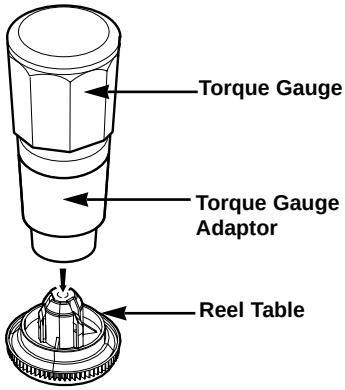


Fig. C-3-1

• Cassette Torque Meter (SRK-VHT-303)

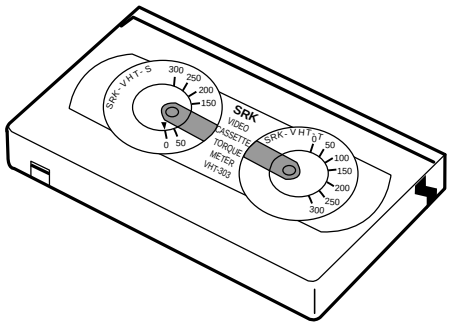


Fig. C-3-2

4.Guide Roller Height Adjustment

Purpose: To regulate the height of the tape so that the bottom of the tape runs along the tape guide line on the Lower Drum.

4-1. Preliminary Adjustment

Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
• Post Height Adjusting Driver	• Play or Review Mode	• Guide Roller Height Adjustment screws on the Supply and Take-Up Guide Rollers.

Adjustment Procedure

1) Confirm if the tape runs along the tape guide line of the Lower Drum.
2) If the tape runs the bottom of the guide line, turn the Guide Roller Height Adjustment Screw to clockwise direction.
3) If it runs the top, turn to counterclockwise direction.
4) Adjust the height of the Guide Roller to be guided to the guide line of the Lower Drum from the starting and ending point of the Drum.

ADJUSTMENT DIAGRAM

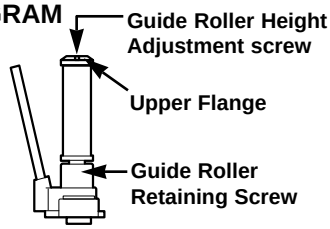


Fig. C-4-1

4-2. Precise Adjustment

Test Equipment/Fixture	Test Equipment Connection Points	Test Conditions VCR(VCP) State	Adjustment Point
• Oscilloscope • Alignment Tape • Post Height Adjusting Driver	• CH-1:PB RF Envelope • CH-2:NTSC: SW 30Hz PAL: SW 25Hz • Head Switching Output Point • RF Envelope Output Point	• Play an Alignment Tape	• Guide Roller Height Adjustment Screws

Adjustment Procedure

1) Play an Alignment Tape after connecting the probe of the Oscilloscope to the RF Envelope Output Test Point and Head Switching Output Test Point.
2) Tracking Control(in PB Mode) : Center Position(When this adjustment is performed after the Drum Assembly has been replaced, set the Tracking Control so that the RF Output is Maximum).
3) Height Adjustment Screw : Flatten the RF waveform. (Fig. C-4-2)
4) Turn(Move) the Tracking Control(in PB Mode) clockwise and counterclockwise.(Fig. C-4-3)
5) Check that any drop of RF Output is uniform at the start and end of the waveform.

NOTE

If the adjustment is excessive or insufficient the tape will jam or fold.

Waveform Diagrams

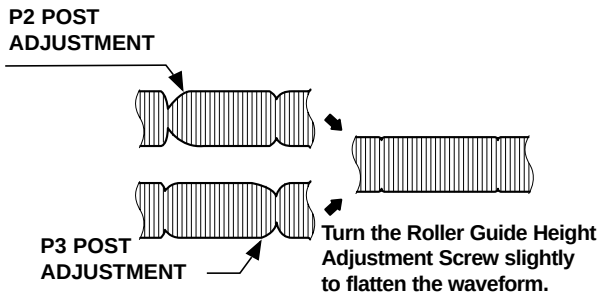


Fig. C-4-2

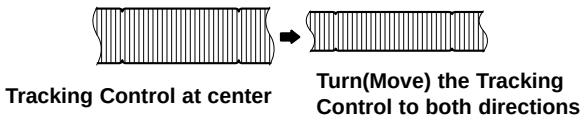
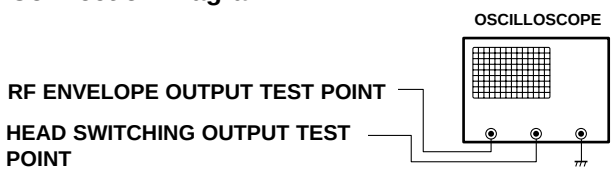


Fig. C-4-3

Connection Diagram



5. Audio/Control (A/C) Head Adjustment

Purpose: To insure that the tape passes accurately over the Audio and Control Tracks in exact alignment of the both Record and Playback Modes.

5-1. Preliminary Adjustment (Height and Tilt Adjustment)

Perform the Preliminary Adjustment, when there is no Audio Output Signal with the Alignment Tape.

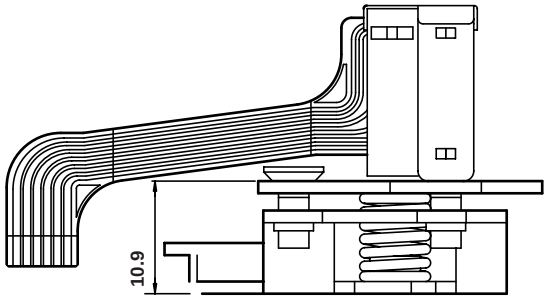
Test Equipment/ Fixture	Test Conditions (Mechanism Condition)	Adjustment Point
• Blank Tape • Screw Driver(+) Type 5mm	• Play the blank tape	• Tilt Adjustment Screw(C) • Height Adjustment Screw(B) • Azimuth Adjustment Screw(A)

Adjustment Procedure/Diagrams

1) Initially adjust the Base Assembly A/C Head as shown Fig. C-5-1 by using the Height Adjustment Screw(B).
2) Play a blank tape and observe if the tape passes accurately over the A/C Head without tape curling or folding.
3) If folding or curling is occured then adjust the Tilt Adjustment Screw(C) while the tape is running to resemble Fig. C-5-3.
4) Reconfirm the tape path after Playback about 4~5 seconds.

NOTE

Ideal A/C head height occurs when the tape runs between 0.2~0.25mm above the bottom edge of the A/C Head core.



A/C Head Base

Fig. C-5-1

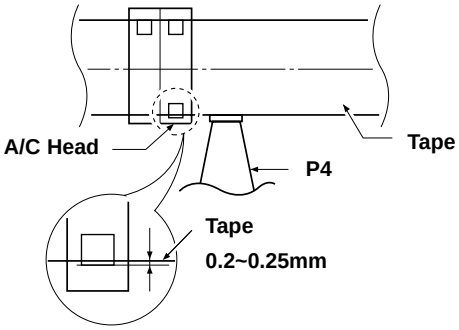
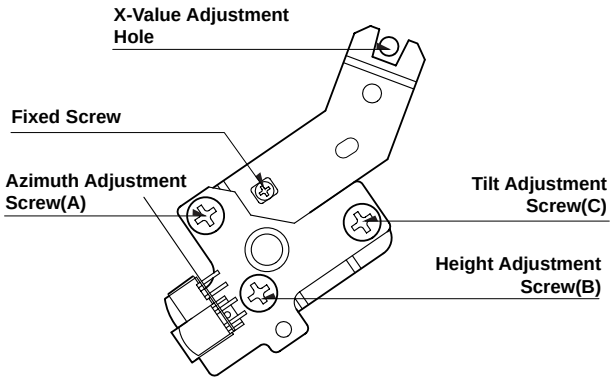


Fig. C-5-3



A/C Head Assembly

Fig. C-5-2

5-2. Confirm that the tape passes smoothly between the Take-up Guide and Pinch Roller(using a mirror or the naked eye).

1) After completing Step 5-1.(Preliminary Adjustment), check that the tape passes around the Take-up Guide and Pinch Roller without folding or curling at the top or bottom.
   (1) If folding or curling is observed at the bottom of the Take-up Guide then slowly turn the Tilt Adjustment Screw(C) in the clockwise direction.
   (2) If folding or curling is observed at the top of it then slowly turn the Tilt Adjustment Screw(C) in the counterclockwise direction.

NOTE:

Check the RF envelope after adjusting the A/C Head, if the RF waveform differs from Fig. C-5-4, performs Precise Adjustment to flat the RF waveform.

5-3. Precise Adjustment (Azimuth adjustment)

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
• Oscilloscope • Alignment Tape(SP) • Screw Driver(+) Type 5mm	• Audio output jack	• Play an Alignment Tape 1kHz, 7kHz Sections	• Azimuth Adjustment Screw(A) • Height Adjustment Screw(B)

Adjustment Procedure

1) Connect the probe of the oscilloscope to Audio Output Jack.
2) Alternately adjust the Azimuth Adjustment Screw(A) and the Tilt Adjustment Screw(C) for maximum output of the 1kHz and 7kHz segments, while maintaining the flattest envelope differential between the two frequencies.

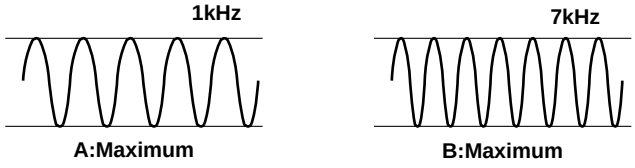
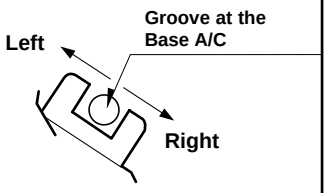


Fig. C-5-4

6. X-Value Adjustment

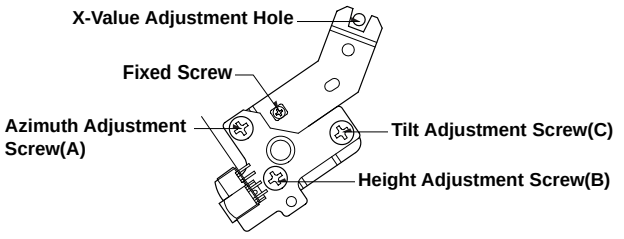
Purpose: To obtain compatibility with the other VCR(VCP) Models.

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Point
• Oscilloscope • Alignment Tape(SP only) • Screw Driver(+) Type 5mm	• CH-1: PB RF Envelope • CH-2: NTSC: SW 30Hz PAL: SW 25Hz • Head Switching Output Test Point • RF Envelope Output Test Point	• Play an Alignment Tape	

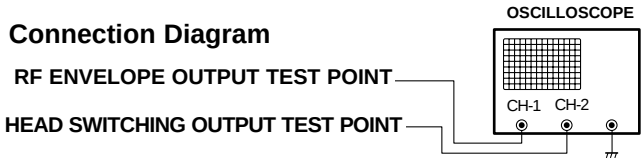
Adjustment Procedure

1) Release the Automatic Tracking to run long enough for tracking to complete it's cycle.
2) Loosen the Fixed Mounting Screw and move the Base Assembly A/C Head in the direction as shown in the diagram to find the center of the peak that allows for the maximum waveform envelope.
   This method should allow the 31μm Head to be centrally located over the 58μm tape track.
3) Tighten the Base Assembly A/C Head mounting Screw.

Adjustment Diagram



Connection Diagram



7. Adjustment after Replacing Drum Assembly (Video Heads)

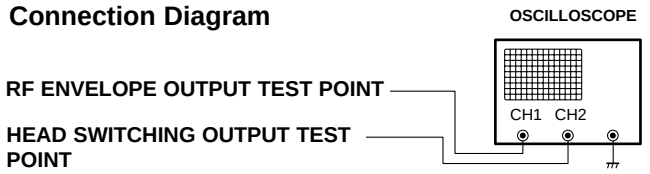
Purpose: To correct for shift in the Roller Guide and X value after replacing the Drum.

Test Equipment/ Fixture	Connection Point	Test Conditions (Mechanism Condition)	Adjustment Points
• Oscilloscope • Alignment Tapes • Blank Tape • Post Height Adjusting Driver • Screw Driver(+) Type 5mm	• CH-1: PB RF Envelope • CH-2: NTSC: SW 30Hz PAL: SW 25Hz • Head Switching Output Test Point • RF Envelope Output Test Point	• Play the Blank Tape • Play an Alignment Tape	• Guide Roller Precise Adjustment • Switching Point • Tracking Preset • X-Value

Checking/Adjustment Procedure

Play a blank tape and check for tape curling or creasing around the Roller Guide. If there is a problem then follow the procedure 4. "Guide Roller Height" and 5. "Audio Control(A/C) Head Adjustment".

Connection Diagram



Waveform

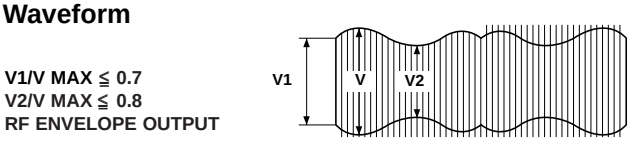


Fig. C-7

8. Check the Tape Travel after Reassembling Deck Assembly.

8-1. Checking Audio and RF Locking Time during playback and after CUE or REV (FF/REW)

Test Equipment/ Fixture	Specification	Connection Points	Test Conditions (Mechanism Condition)
• Oscilloscope • Alignment Tapes(with 6H 3KHz Color Bar Signal) • Stop Watch	• RF Locking Time: Less than 5 sec. • Audio Locking Time:Less than 10sec	• CH-1: PB RF Envelope • CH-2: Audio Output • RF Envelope Output Point • Audio Output Jack	• Play an Alignment Tape (with 6H 3kHz Color Bar Signal)

Checking Procedure

Play an Alignment Tape then change the operating mode to CUE or REV and confirm if the unit meets the above listed specifications.

NOTES:

1) CUE is the forward search mode (FF)
2) REV is the backward search mode (REW)
3) Refer to the Play mede

8-2. Checking for tape curling or jamming

Test Equipment/ Fixture	Specification	Test Conditions (Mechanism Condition)
• T-160 Tape • T-120 Tape	• Be sure there is no tape jamming or curling at the begining, middle or end of the tape.	• Run the CUE, REV, Play mode at the beginning and the end of the tape.

Checking Procedure

1) Confirm that the tape runs smoothly around the roller guides, Drum and A/C Head Assemblies while abruptly changing operating modes from Play to CUE or REV. This is to be checked at the begining, middle and end sections of the tape.
2) Confirm that the tape passes over the A/C Head Assembly as indicated by proper audio reproduction and proper tape counter performance.

4-2. MAINTENANCE/INSPECTION PROCEDURE

1. Check before starting repairs

The following faults can be remedied by cleaning and oiling. Check the needed lubrication and the conditions of cleanliness in the unit.
Check with the customer to find out how often the unit is used, and then determine that the unit is ready for inspection and maintenance. Check the following parts.

Phenomenon	Inspection	Replacement
Color beats	Dirt on Full-Erase Head	○
Poor S/N, no color	Dirt on Video Head	○
Vertical or Horizontal jitter	Dirt on Video Head Dirt on tape transport system	○
Low volume, Sound distorted	Dirt on Audio/Control Head	○
Tape does not run. Tape is slack	Dirt on Pinch Roller	○
In Review and Unloading (off mode), the tape is rolled up loosely.	Clutch Assembly D35 torque reduced	○
	Cleaning Drum and transport system	Fig. C-9-3

NOTE

If locations marked with ○ do not operate normally after cleaning, check for wear and replace.
See the EXPLODED VIEWS at the end of this manual as well as the above illustrations and see the Greasing (Page 45, 46) for the sections to be lubricated and greased.

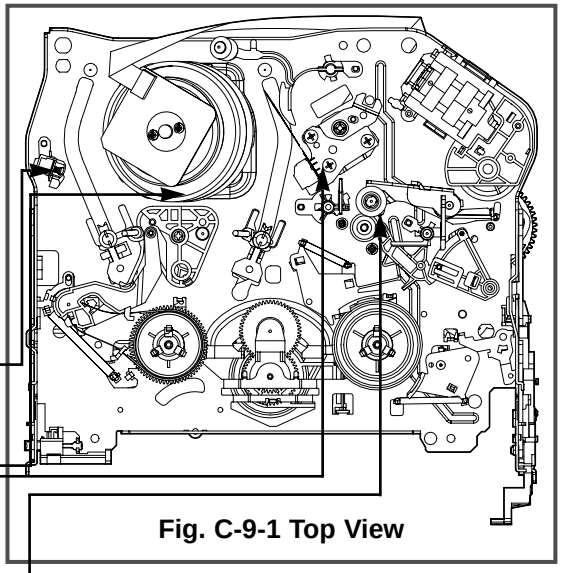


Fig. C-9-1 Top View

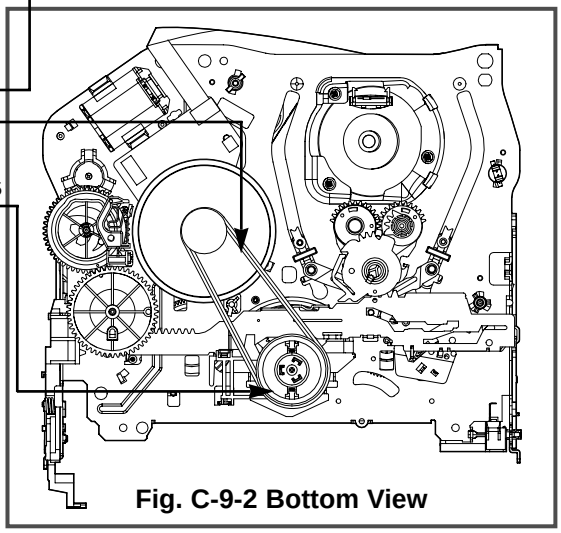


Fig. C-9-2 Bottom View

*** No. (1)~(12) Indicates the Tape Path to be traveled from Supply Reel to Take-up Reel.**

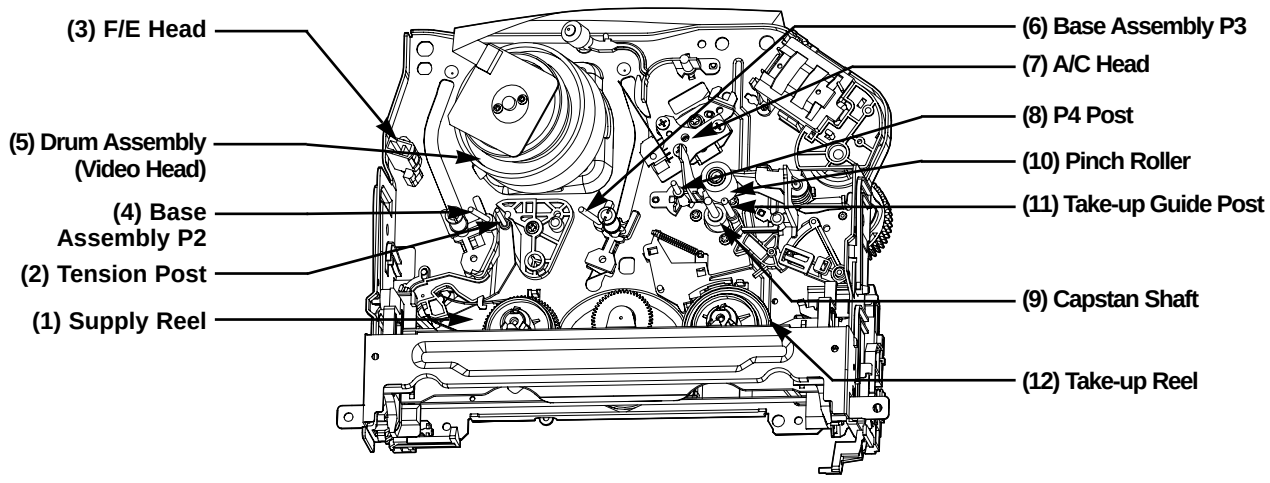


Fig. C-9-3 Tape Transport System

2. Required Maintenance

The recording density of a VCR(VCP) is much higher than that of an audio tape recorder. VCR(VCP) components must be very precise, at tolerances of 1/1000mm, to ensure compatibility with the other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective. To ensure a good picture, periodic inspection and maintenance, including replacement of worn out parts and lubrication, is necessary.

3. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR(VCP), and the environment in which the VCR(VCP) is used.
But, in general home use, a good picture will be maintained if inspection and maintenance is made every 1,000 hours. The table below shows the relation between time used and inspection period.

Table 1

When inspection is necessary / Average hours used per day	About 1 year	About 18 months	About 3 years
One hour	■	■	■
Two hours	■	■	
Three hours	■		

4. Supplies Required for Inspection and Maintence

(1) Grease : Kanto G-311G (Blue) or equivalent
(2) Isopropyl Alcohol or equivalent
(3) Cleaning Patches
(4) Grease : Kanto G-381(Yellow)

5. Maintenance Procedure

5-1) Cleaning

(1) Cleaning video head
First use a cleaning tape. If the dirt on the head is too stubborn to remove by tape, use the cleaning patch. Coat the cleaning patch with Isopropyl Alcohol. Touch the cleaning patch to the head tip and gently turn the head(rotating cylinder) right and left.
(Do not move the cleaning patch vertically. Make sure that only the buckskin on the cleaning patch comes into contact with the head. Otherwise, the head may be damaged.)
Thoroughly dry the head. Then run the test tape. If Isopropyl Alcohol remains on the video head, the tape may be damaged when it comes into contact with the head surface.
(2) Clean the tape transport system and drive system, etc, by wiping with a cleaning patch wetted with Isopropyl Alcohol.

NOTES:

① It is the tape transport system which comes into contact with the running tape. The drive system consists of those parts which moves the tape.
② Make sure that during cleaning you do not touch the tape transport system with excessive force that would cause deformation or damage to the system.

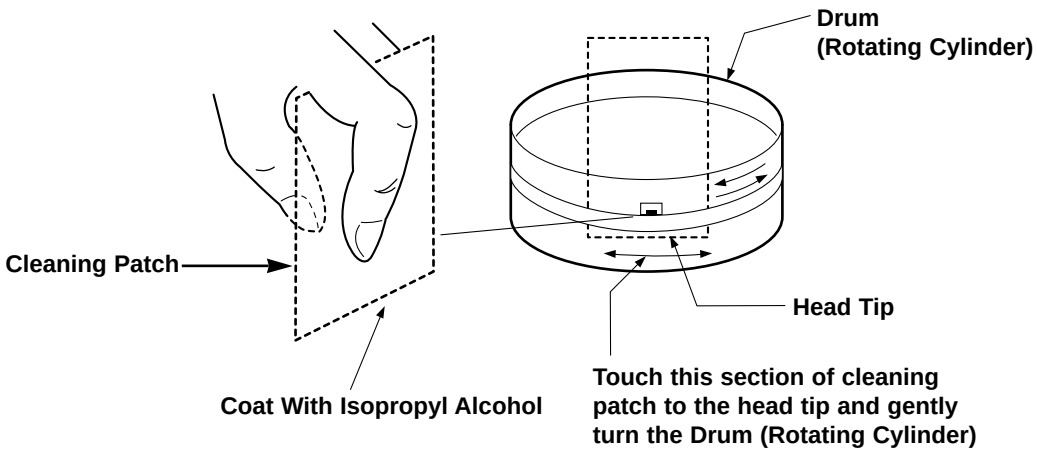

Drum
(Rotating Cylinder)
Cleaning Patch
Head Tip
Coat With Isopropyl Alcohol
Touch this section of cleaning patch to the head tip and gently turn the Drum (Rotating Cylinder)

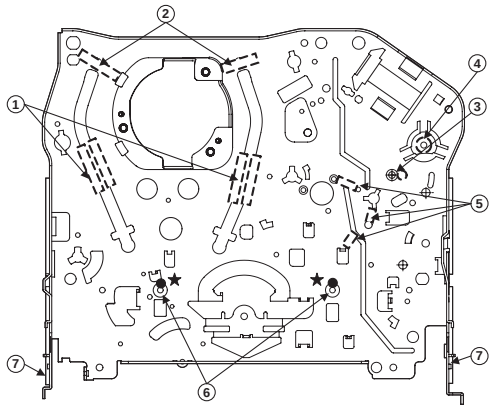
Fig. C-9-4

5-2) Greasing

(1) Greasing guidelines
Apply grease, with a cleaning patch. Do not use excessive grease. It may come into contact with the tape transport or drive system. Wipe excessive grease and clean with cleaning patch wetted in Isopropyl Alcohol.

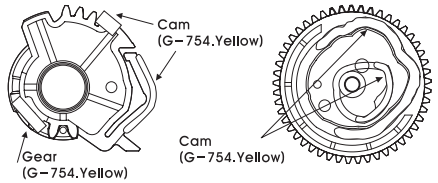
NOTE:Greasing Points

1) Loading Path Inside & Top side
2) Base Assembly P2, P3 stopper
3) Shaft
4) L/D Motor Gear Wheel Part
5) Arm Take-up Rubbing Sections
6)Reel S,T shaft(G381:Yellow)
7) Arm Assembly F/L Rotating Sections

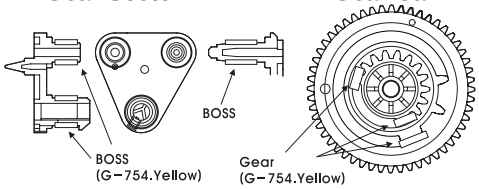


Chassis (Top)

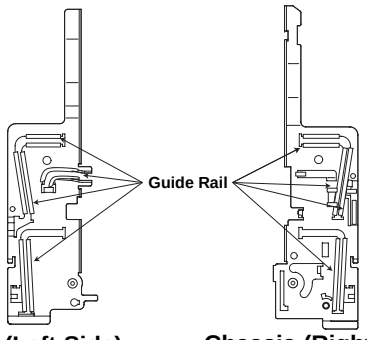
Gear Part



Gear Sector **Gear Cam**



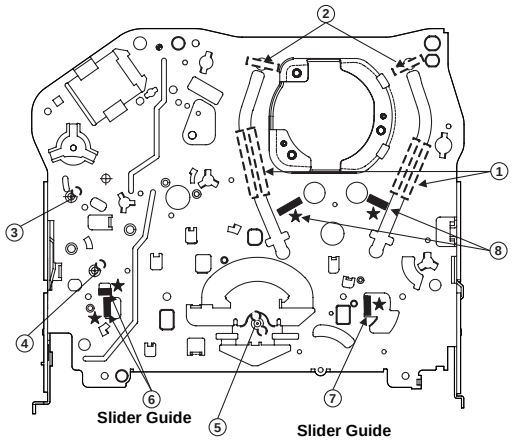
Base Loading **Gear Drive**



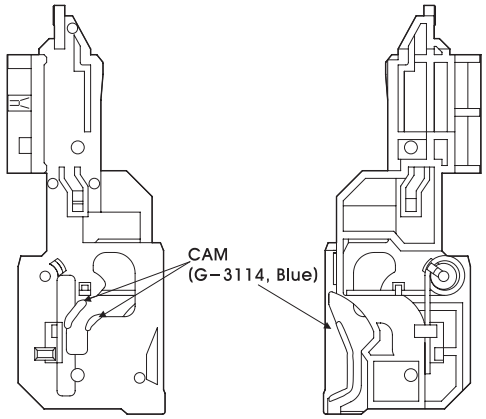
Chassis (Left Side) **Chassis (Right Side)**

(2) Periodic greasing
Grease specified locations every 5,000 hours.

1) Loading Path Inside & Top side
2) Base Assembly P2,P3 stopper
3) Shaft
4) Shaft
5) Clutch Assembly D35 Shaft
6) Plate Slider Guide Sections
7) Plate Slider Guide Sections
8) Gear Assembly P2, P2 Rubbing Sections



Chassis (Bottom)



Gear Rack F/L

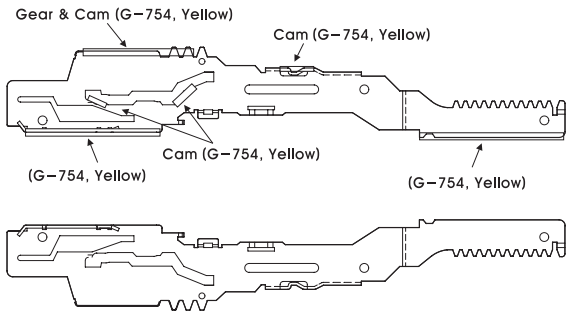
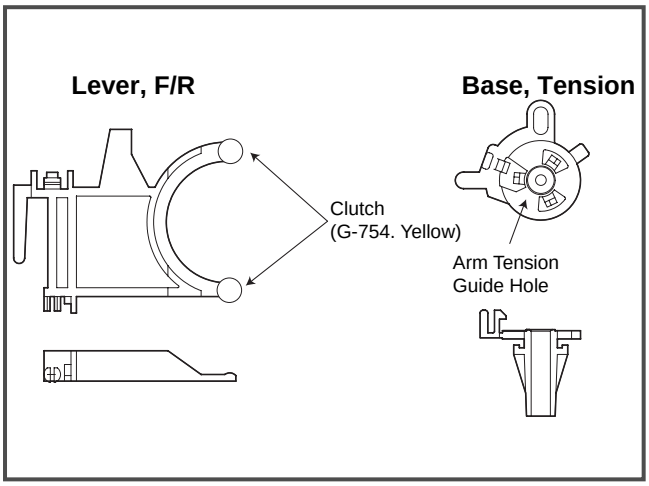
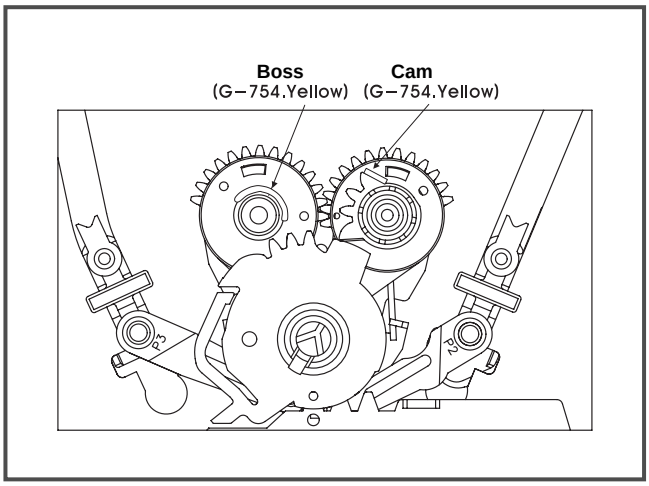


Plate Slider

Lever, F/R, Base, Tension



GEAR AY, P2 & P3



5-10. SCHEMATIC DIAGRAM – MPEG SECTION –

【DVD & AMP BOARD 】(1/6)

IC501
MT1379DEC
IC501
MPEG & VIDEO

IC503
SD RAM
SDRAM (16M)
IC503
HY57V16160DTC-7

IC502
SD RAM
IC502
HY57V16160DTC-7

IC507
BUFFER
IC507
MM1623XFBE

IC5A1
SD RAM
IC5A1
DTS60910M DVD

IC505
DAC
IC505
S524A440X21

SWITCH
Q501
KTC3875S

DOWN LOAD
J501
for
Down Load

INTERFACE
SECTION

⑥ DVD&AMP BOARD (6/6)

④ DVD&AMP BOARD (2/6)

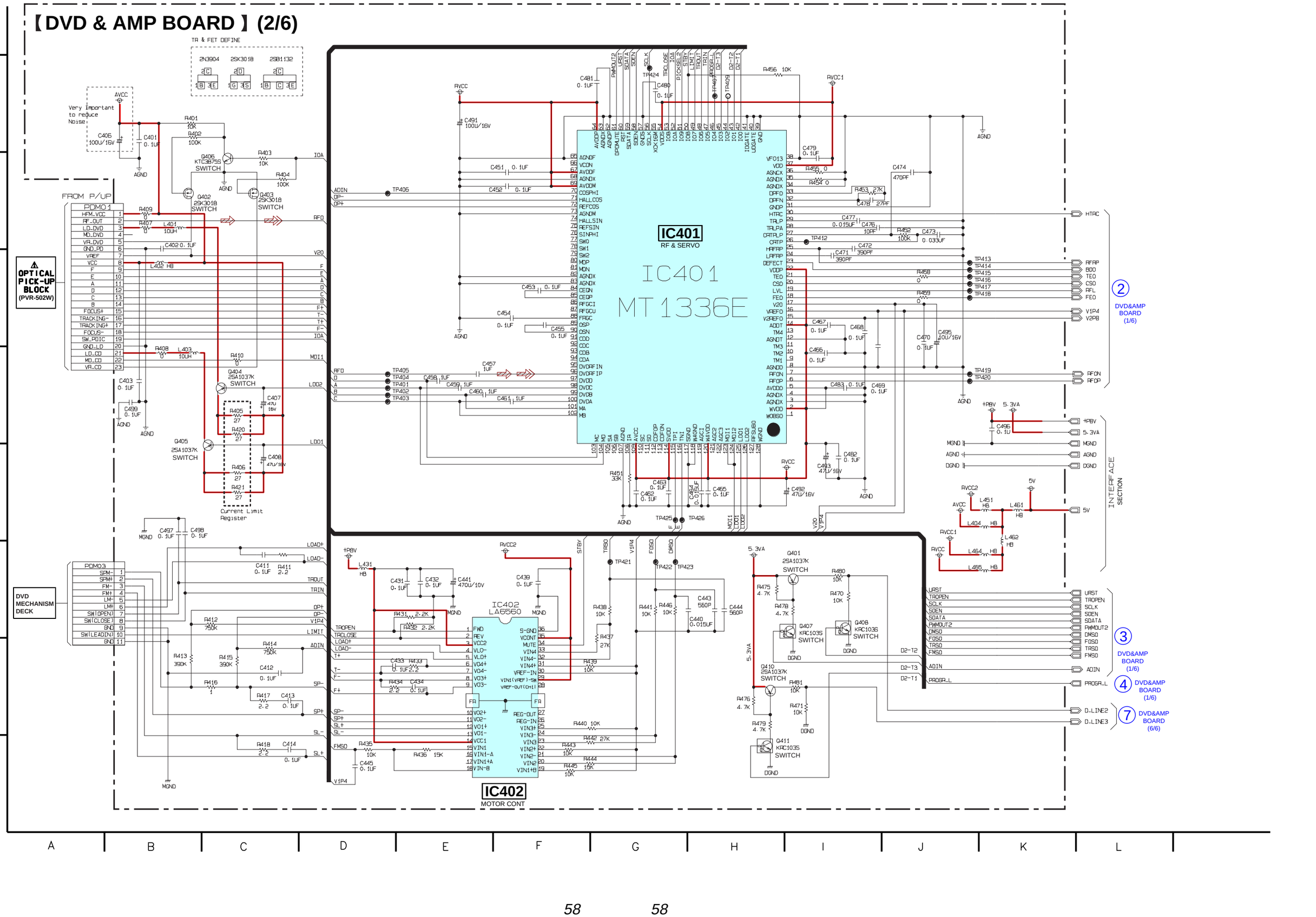
⑤ DVD&AMP BOARD (6/6)

① DVD&AMP BOARD (5/6)

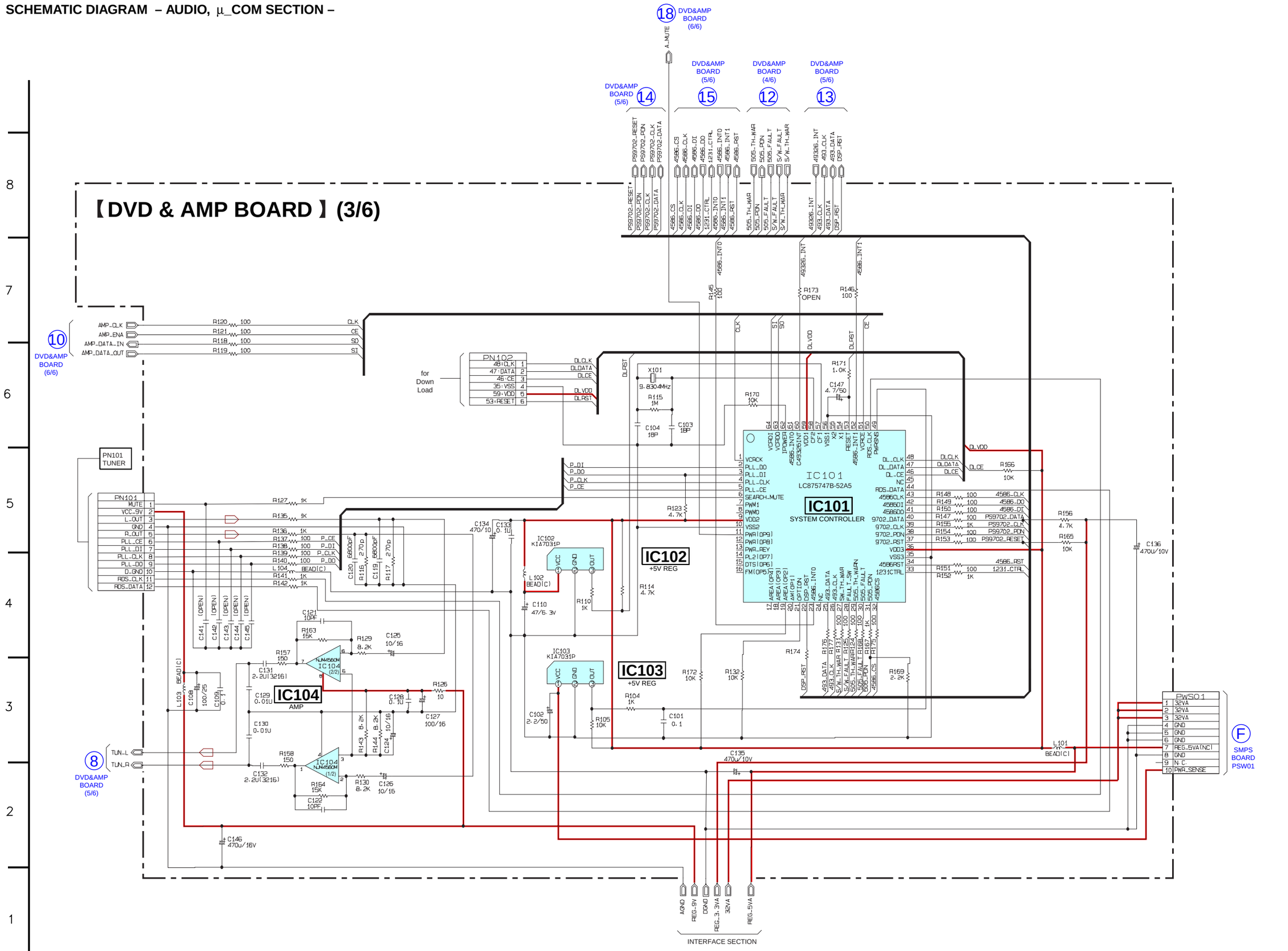
② DVD&AMP BOARD (2/6)

③ DVD&AMP BOARD (2/6)

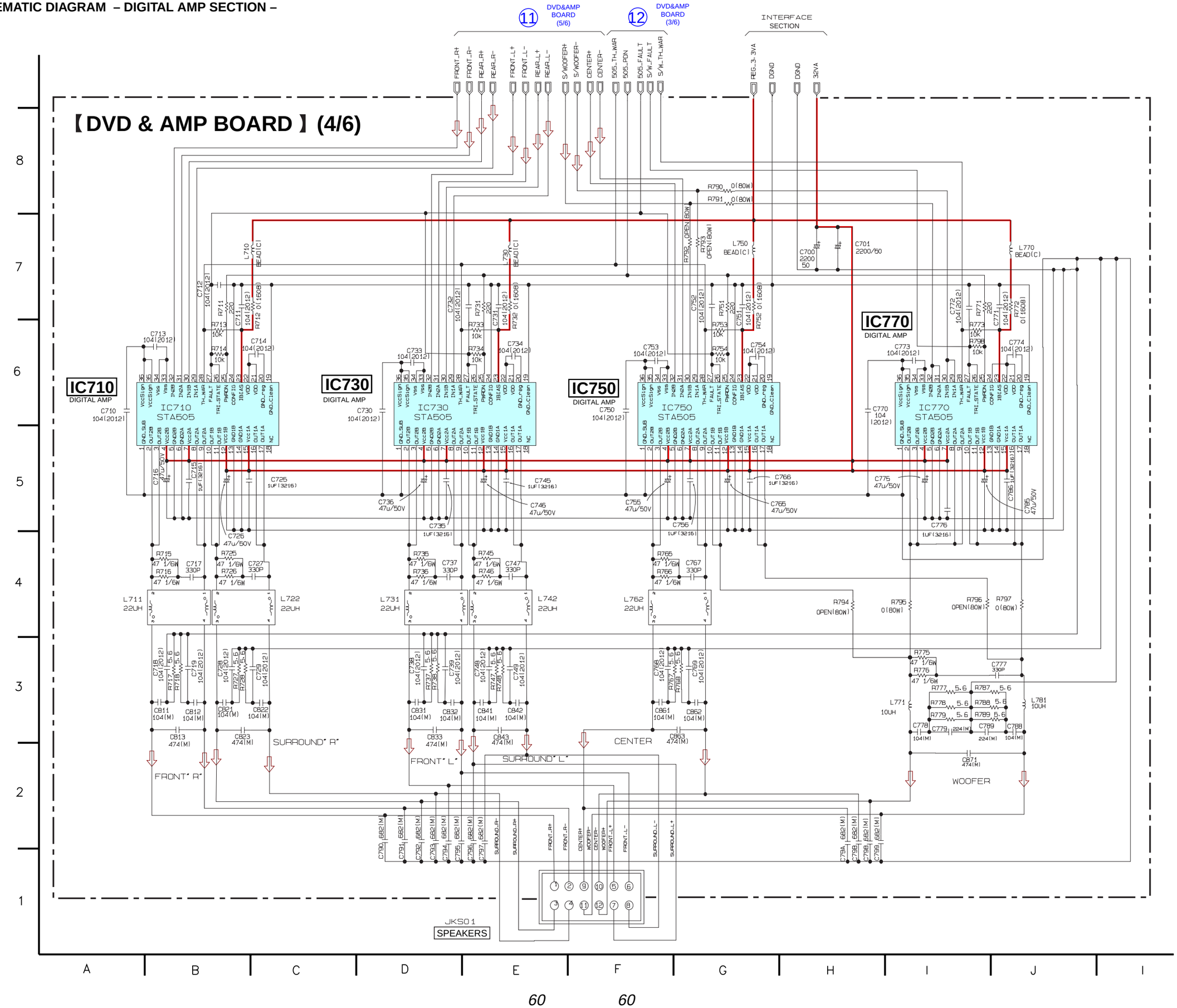
5-11. SCHEMATIC DIAGRAM – RF & SERVO SECTION –



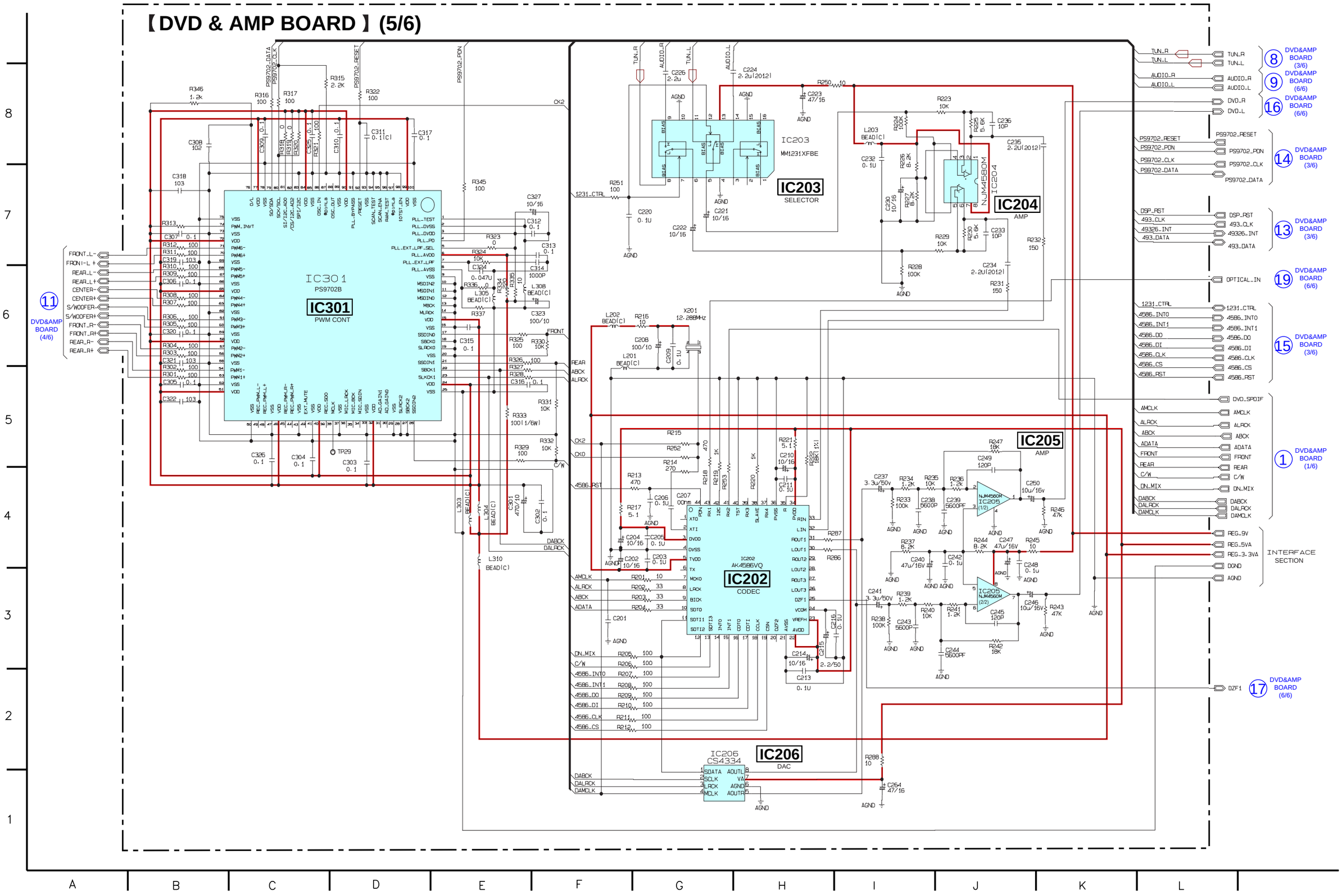
5-12. SCHEMATIC DIAGRAM – AUDIO, μ_COM SECTION –



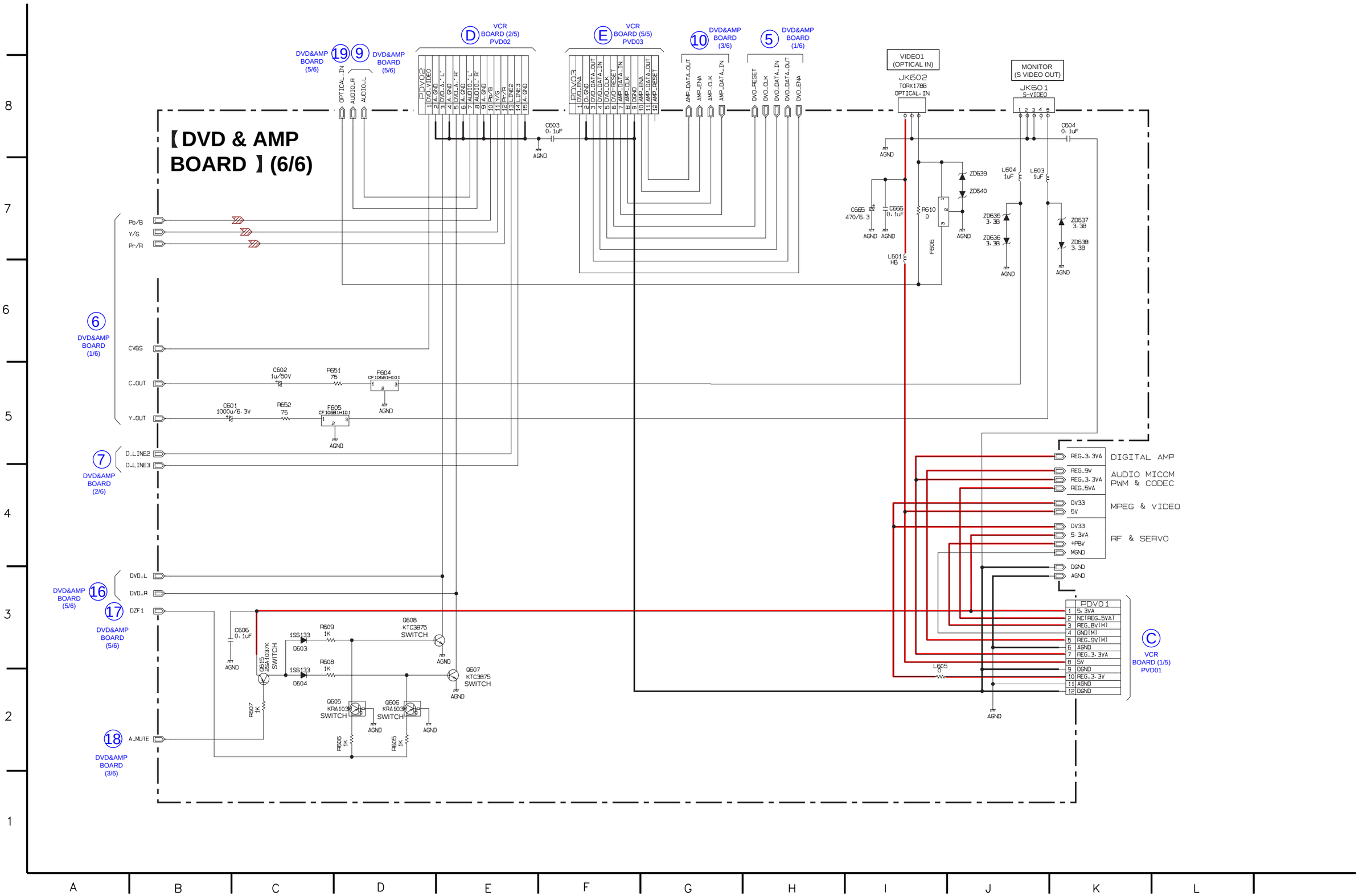
5-13. SCHEMATIC DIAGRAM – DIGITAL AMP SECTION –



5-14. SCHEMATIC DIAGRAM – PWM & CODEIC SECTION –



5-15. SCHEMATIC DIAGRAM – INTERFACE SECTION –



• VOLTAGE CHART (DVD & AMP BOARD) -1/2

MODE / PIN NO.	STOP	PLAY
IC101		
1	5.23	5.22
2	0	0
3	1.75	1.99
4	0	0
5	4.91	4.91
6	NC	NC
7	0.54	1.88
8	0.54	1.88
9	4.91	4.91
10	0	0
11	4.77	4.77
12	0.12	0.12
13	4.72	4.72
14	0	0
15	0	0
16	0	0
17	0	0
18	0	0
19	0	0
20	0	0
21	0	0
22	3.24	3.22
23	0.91	0.91
24	1.65	1.65
25	0	0
26	0	0
27	1.99	1.93
28	3.12	3.12
29	3.26	3.25
30	3.12	3.12
31	4.65	4.65
32	NC	NC
33	NC	NC
34	NC	NC
35	0	0
36	4.91	4.91
37	3.25	3.24
38	4.91	4.91
39	0	0
40	3.22	3.2
41	NC	NC
42	NC	NC
43	NC	NC
44	NC	NC
45	NC	NC
46	4.91	4.9
47	2.08	2.03
48	2.07	2.07
49	4.91	4.9
50	NC	NC
51	5.09	5.08
52	0	0
53	4.91	4.91
54	2.16	2.1

MODE / PIN NO.	STOP	PLAY
55	2.04	1.96
56	0	0
57	2.36	2.36
58	2.42	2.42
59	4.9	4.91
60	2.4	2.4
61	1.8	1.9
62	4.9	4.9
63	0	0
64	5.23	5.22
IC102		
1	4.93	4.93
2	0	0
3	4.93	4.93
IC103		
1	3.72	3.71
2	0	0
3	4.93	4.93
IC104		
1	6.04	6.04
2	6.04	6.04
3	6.04	6.04
4	0	0
5	6.04	6.04
6	6.04	6.04
7	6.04	6.04
8	12.09	12.08
IC202(AK4586)		
1	2.41	2.39
2	2.04	2.07
3	4.85	4.84
4	0	0.01
5	3.28	3.28
6	4.85	0.01
7	1.18	1.15
8	1.65	1.65
9	1.63	1.62
10	1.3	1.25
11	0	1.63
12	0	1.63
13	0	0.58
14	0	0.03
15	0	0.03
16	0.45	0.2
17	0	0.01
18	0	0.02
19	4.93	4.92
20	0	0.02
21	0	0.01
22	4.94	4.93
23	4.93	4.93
24	2.46	2.46
25	0	0.02
26	2.47	2.47
27	2.47	2.47

MODE / PIN NO.	STOP	PLAY
28	2.47	2.47
29	2.47	2.47
30	2.47	2.47
31	2.47	2.47
32	2.47	2.46
33	2.47	2.46
34	4.93	4.92
35	1.2	1.2
36	0	0.01
37	2.44	2.45
38	0	0.01
39	2.44	2.45
40	0	0.02
41	2.44	2.45
42	0	0.01
43	4.24	4.23
44	4.93	4.93
IC301		
1	0	0
2	0	0
3	3.21	3.18
4	4.91	4.91
5	3.21	3.18
6	2.95	2.92
7	1.72	1.7
8	0	0
9	0	0
10	0	0
11	0	0
12	0	0
13	0	0
14	0	0
15	3.21	3.18
16	0	0
17	0	0.9
18	0	0
19	0	0
20	0	0
21	0	0
22	0	0
23	1.59	1.6
24	1.63	1.62
25	3.22	3.18
26	0	0
27	0	0
28	0	0
29	0	0
30	NC	NC
31	NC	NC
32	3.21	3.18
33	0	0
34	NC	NC
35	NC	NC
36	NC	NC
37	0	0

MODE / PIN NO.	STOP	PLAY
38	1.6	1.59
39	NC	NC
40	3.21	3.18
41	0	0
42	NC	NC
43	0	0
44	NC	NC
45	NC	NC
46	3.21	3.18
47	0	0
48	NC	NC
49	NC	NC
50	0	0
51	3.21	318
52	0	0
53	1.59	1.58
54	1.59	1.58
55	0	0
56	1.59	1.58
57	1.59	1.58
58	3.21	3.18
59	0	0
60	1.59	1.58
61	1.59	1.58
62	0	0
63	1.59	1.58
64	1.59	1.59
65	3.21	3.18
66	0	0
67	1.59	1.58
68	1.59	1.58
69	0	0
70	1.59	1.58
71	1.59	1.58
72	3.21	3.18
73	0	0
74	0	0
75	0	0
76	3.1	3.09
77	3.21	3.18
78	0	0
79	3.22	3.2
80	0	0
81	3.21	3.18
82	3.21	3.18
83	0	0
84	3.21	3.18
85	0	0
86	1.67	1.67
87	NC	NC
88	NC	NC
89	0	0
90	3.21	3.18
91	0	0
92	3.25	3.24

MODE / PIN NO.	STOP	PLAY
93	0	0
94	0	0
95	0	0
96	0	0
97	NC	NC
98	0	0
99	3.21	3.18
100	0	0
IC401(MT1336E)		
1	1.03	2.99
2	5.11	5.08
3	0	0
4	0	0
5	5.11	5.07
6	0	1.95
7	0	0
8	0	0
9	5.11	0
10	5.11	5.08
11	5.11	5.08
12	0	0
13	5.11	0
14	5.11	5.08
15	2.84	2.81
16	1.45	1.43
17	2.08	2.07
18	1.37	1.42
19	0.69	2.3
20	2.4	0
21	2.35	0
22	5.11	5.08
23	0	0
24	2.59	3.2
25	0.19	1.88
26	1.58	0
27	2.56	3.13
28	2	2.01
29	2	2.06
30	2.96	1.52
31	0	0
32	0.06	2.07
33	0.07	2.07
34	0	0
35	0	0
36	0	0
37	5.13	0
38	0	0
39	0	0
40	0	0
41	0	0
42	5.12	5.09
43	5.12	5.09
44	5.12	5.09
45	5.12	5.09
46	5.12	5.09

MODE / PIN NO.	STOP	PLAY
47	0	0
48	5.12	5.09
49	5.12	0
50	5.08	5.06
51	5.09	5.07
52	5.1	0
53	0	0
54	5.13	0
56	1.61	0
57	0	0
58	0	0
59	0	0
60	0	0
61	3.28	0
62	0	0
63	0	0
64	0	0
65	0	0
66	0.026	0
67	5.12	5.08
68	0	0
69	5.12	0
70	3.21	2.03
71	3.46	2.2
72	2.81	0
73	0	0
74	0.21	0.09
75	0.22	0
76	0	0.1
77	0.21	0.09
78	0.23	0.09
79	0.21	0.08
80	0.23	0.08
81	0.22	0
82	0	0
83	0	0
84	0.07	0
85	0.07	2.27
86	1.97	0
87	1.96	1.9
88	1.54	1.71
89	0.19	2.22
90	0.21	0
91	0.22	0.06
92	0.22	0
93	0.23	0.06
94	0.23	0.06
95	2.28	0
96	2.28	2.25
97	2.27	1.23
98	2.27	2.23
99	2.27	2.23
100	2.16	2.23
101	2.08	2.17
102	2.07	2.17

MODE / PIN NO.	STOP	PLAY
103	2.07	2.18
104	2.08	0
105	0.13	0.15
106	0.14	0.16
107	0	0
108	1.28	1.28
109	5.18	5.05
110	0.14	0.16
111	0.15	0.15
112	0.13	0.16
113	0.14	0.15
114	5.1	5.05
115	2.07	2.06
116	2.06	2.09
117	0	0
118	0	0
119	0	0
120	5.1	5.05
121	0.13	0.15
122	0.14	0.15
123	0	0.18
124	0	0.18
125	5.08	5.03
126	5.08	3.16
127	0.06	2.08
128	0	0
IC402 (LA6560)		
1	0	0
2	0	0
3	8.04	8.01
4	0.12	0.06
5	0	0.06
6	3.64	3.69
7	3.62	3.61
8	3.64	3.53
9	3.6	3.76
10	3.62	2.43
11	3.63	4.85
12	3.62	3.72
13	3.64	3.57
14	8.04	8.01
15	1.45	1.48
16	0.27	1.39
17	0.29	1.32
18	1.45	1.43
19	1.45	1.43
20	1.45	0.82
21	1.45	1.43
22	1.45	1.43
23	1.47	1.37
24	1.45	1.43
25	1.45	1.43
26	0.95	0.9
27	0	0
28	1.45	1.43

MODE / PIN NO.	STOP	PLAY
29	5.15	5.11
30	1.45	1.43
31	1.45	1.43
32	1.45	1.43
33	1.46	1.45
34	5.08	5.06
35	5.15	5.11
36	0	0
IC501(MT1379)		
1	1.22	1.22
2	0	0
3	0.96	0.9
4	2	2.06
5	0	1.51
6	1.48	1.47
7	0	1.56
8	3.2	1.52
9	0.12	0.06
10	0.12	0.06
11	3.25	3.25
12	1.41	1.49
13	1.41	1.41
14	0	0
15	1.42	1.42
16	3.3	0
17	2.53	2.53
18	1.42	2.27
19	1.42	1.39
20	0	0
21	2.61	2.58
22	0.75	1.46
23	2.83	1
24	1.9	0.89
25	1.72	0.39
26	0.68	0.31
27	2.84	3.16
28	0	0
29	2.85	0.66
30	1.83	0.49
31	0.91	1.39
32	1.43	1.2
33	1.51	1.57
34	1.51	1.43
35	3.3	3.29
36	0.81	1.26
37	1.45	1.02
38	1.82	1.6
39	1.2	1.5
40	2	2.06
41	2.17	1.95
42	2.53	2.52
43	1.96	1.9
44	1.79	1.9
45	0.8	1.72
46	0.8	1.96

MODE / PIN NO.	STOP	PLAY
47	0.8	1.84
48	3.3	2.63
49	0	0.13
50	0	0.07
51	0	0
52	0	0
53	0	0
54	0	0
55	3.25	3.27
56	1.2	1.18
57	0	0
58	3.29	3.29
59	0	0
60	0	0
61	2.59	2.57
62	2.58	2.58
63	0	0
64	2.59	2.56
65	3.29	3.29
66	3.3	3.29
67	3.29	3.29
68	2.57	2.56
69	5.19	5.18
70	2.59	2.57
71	0.12	0.08
72	2.53	2.52
73	2.59	2.57
74	3.29	3.29
75	2.61	2.61
76	3.27	3.24
77	0	0
78	0.94	1.04
79	0.78	1.06
80	0.89	1.15
81	0.99	1.34
82	2.52	2.52
83	3.09	1.33
84	0.37	1.16
85	3.08	1.1
86	3.07	1.08
87	0.59	1.04
88	1.57	2.53
89	3.2	3.13
90	2.77	2.53
91	0.22	1.68
92	0	0
93	3.32	1
94	0.16	1.58
95	3.31	1.62
96	3.3	1.08
97	3.3	3.29
98	3.32	1.62
99	0.16	1.09
100	3.32	1.27
101	3.3	1.32

MODE / PIN NO.	STOP	PLAY
102	0	0
103	1.56	1.55
104	0.94	1.25
105	0.41	0
106	0.05	0.06
107	0	0.06
108	3.27	3.26
109	0	0
110	0.19	1.74
111	3.3	3.29
112	0.18	1.62
113	2.98	2.38
114	3.02	1.48
115	0	0
116	2.86	3.01
117	2.86	2.54
118	0	0
119	0	2.5
120	2.55	2.51
121	3.03	1.4
122	3.03	1.4
123	0.22	1.39
124	0.22	0.34
125	0	0
126	3.31	0.98
127	0.26	1.64
128	3.31	1.53
129	3.3	1.15
130	3.3	3.29
131	3.31	1.49
132	0.16	0.89
133	3.3	0
134	3.3	1.07
135	0	0
136	2.86	2.53
137	2.86	2.53
138	0.07	0.86
139	0.09	0.99
140	0.07	2.51
141	0.07	0.94
142	0.09	1.13
143	0.07	1.19
144	0.09	1.07
145	0.09	0
146	0	1.51
147	0.09	1.25
148	0.07	1.64
149	0.06	0
150	0	1.65
151	0.07	3.29
152	0	1.6
153	0	1.64
154	0	1.44
155	0	0
156	0	0

• VOLTAGE CHART (DVD & AMP BOARD) -2/2

MODE / PIN NO.	STOP	PLAY
157	0	1.63
158	0	3.29
159	0	3.27
160	0	1.27
161	0	1.27
162	0	2.35
163	0	0
164	0	0.73
165	0	3.27
166	0	0.5
167	0	0
168	0	0.53
169	0	3.27
170	0	0.59
171	0	0
172	3.01	0.72
173	0	0.72
174	0	0
175	0	2.73
176	0	3.13
177	0	3.13
178	0	3.25
179	0	0
180	0	0
181	2.04	2.64
182	0	2.52
183	0	0
184	0	0.09
185	0	3.26
186	_	_
187	0	0.08
188	0	0
189	0	0
190	0	0
191	0.23	0
192	0	3.29
193	0	0
194	0	0
195	0	0
196	0	0
197	0	1.63
198	0	0
199	0	0
200	0	2.15
201	0	1.44
202	0	1.44
203	0	1.43
204	0	1.43
205	0	1.42
206	0	2.1
207	0	2.07
208	0	1.41
209	0	1.52
210	0	1.43
211	0	2.81

MODE / PIN NO.	STOP	PLAY
212	0	3.28
213	0	0.12
214	0	0.12
215	1.02	1.43
216	0	1.43
IC502(SDRAM)		
1	3.27	3.28
2	1.18	1.26
3	1.1	1.52
4	0	0
5	0.66	1.07
6	0.85	1.12
7	3.27	3.28
8	0.51	0.97
9	3.06	0
10	0	0
11	0.06	0.98
12	3.18	0.87
13	3.27	3.28
14	2.94	2.56
15	0.47	0.42
16	2.93	3.01
17	3.21	3.22
18	2.87	2.95
19	0.15	1.32
20	0	0.05
21	3.09	1.32
22	3.09	1.32
23	3.09	1.32
24	3.09	1.33
25	3.27	3.29
26	0	0
27	0.15	1.36
28	1.84	2.36
29	1	2.32
30	0.54	1.75
31	0.06	0.06
32	0.05	0.06
33	0	0
34	0.73	1.26
35	1.48	1.55
36	2.91	2.53
37	0.07	0
38	3.27	3.28
39	1.06	1.05
40	0.47	0.98
41	0	0
42	0	0.6
43	1.12	1.24
44	3.27	3.28
45	1.21	0.99
46	1.31	1.34
47	0	0
48	1.43	1.44
49	0.88	1.01

MODE / PIN NO.	STOP	PLAY
50	0	0
IC505(EEPROM)		
1	0	0
2	0	0
3	0	0
4	0	0
5	3.28	3.29
6	3.28	3.29
7	0	0
8	3.28	3.29
IC507(MM1623)		
1	5.09	5.08
2	2.43	2.42
3	5.09	5.08
4	1.45	0
5	0	0
6	1.45	1.69
7	0	0
8	2.47	2.46
9	0	0
10	1.14	1.76
11	0	0
12	2.42	2.42
13	5.09	5.08
14	2.43	2.42
15	0	0
16	2.49	2.47
17	0	0
18	2.48	2.47
19	0	0
20	1.18	2.3
21	1.76	2.17
22	0	0
23	1.76	2.24
24	0	0
25	0	0
26	0	0
27	0.06	0.05
28	5.09	0
IC5A1(FLASH)		
1	0.08	0.16
2	1.82	0.45
3	2.84	0
4	2.83	3.12
5	0.69	0.26
6	1.72	0.25
7	1.92	0.9
8	1.7	1.45
9	0	0
10	0	0
11	3.27	3.29
12	3.56	3.55
13	3.29	3.29
14	0	0
15	0.23	0.06

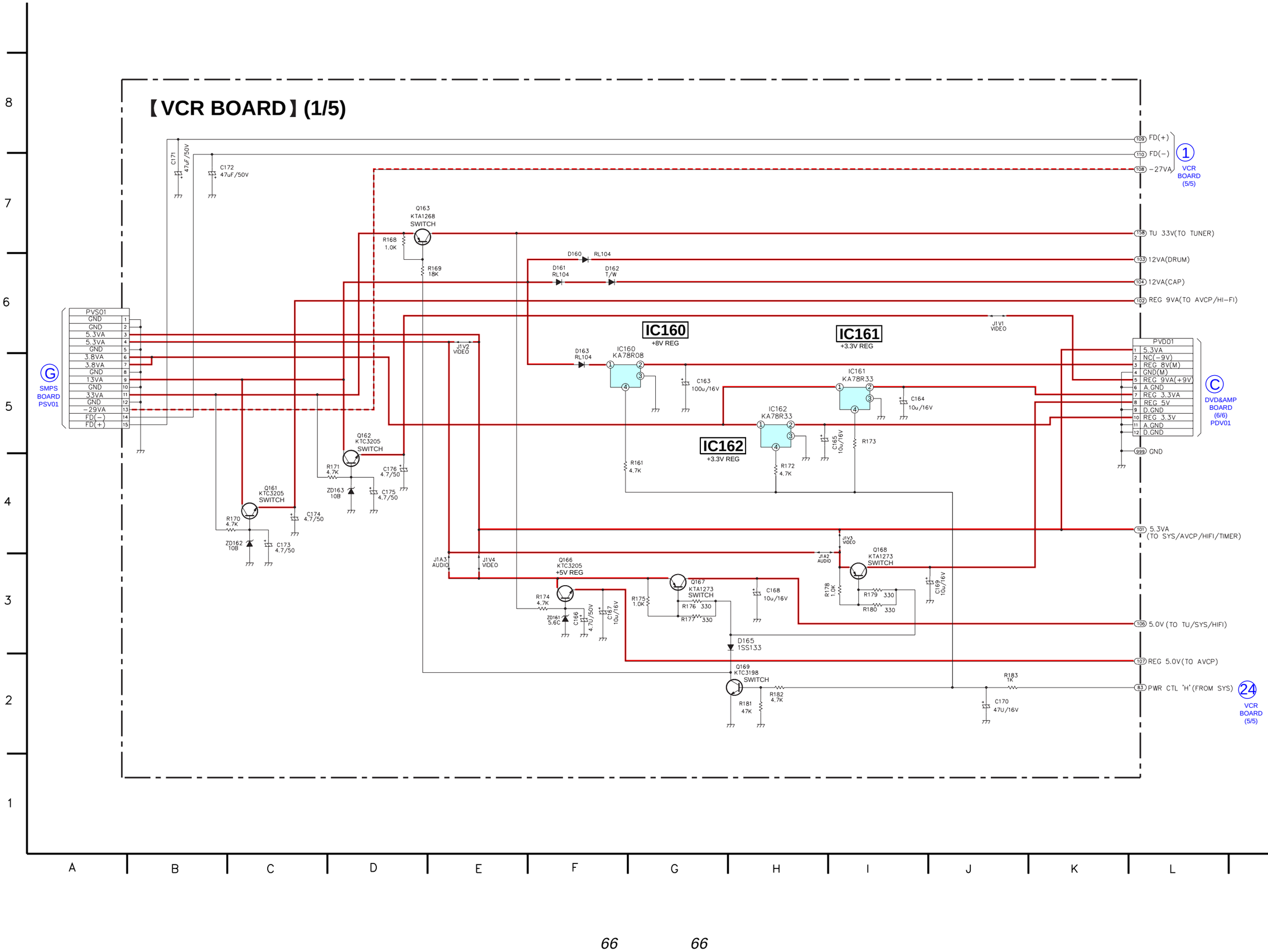
MODE / PIN NO.	STOP	PLAY
16	0	0
17	0	0
18	0	0.87
19	1.98	2.64
20	2.28	2.18
21	2.13	1.96
22	1.67	2.01
23	1.99	1.72
24	1.93	2.19
25	2.05	1.94
26	0	0
27	0	0
28	0	0
29	1.49	2.03
30	0.16	1.07
31	1.96	1.25
32	0.16	1.1
33	0.99	2.2
34	1.17	1.07
35	0.79	1.82
36	0.15	1.07
37	3.29	3.3
38	1.93	3.09
39	0.16	1.07
40	1.5	2.2
41	0.16	1.07
42	1.21	2.64
43	0.16	1.08
44	1.64	1.48
45	2.05	2.06
46	0	0
47	0	0
48	0.07	0.13
IC710		
1	0	0
2	15.6	15.6
3	15.6	15.6
4	3.59	31.58
5	0	0
6	0	0
7	31.59	31.58
8	15.62	15.62
9	15.62	15.62
10	15.61	15.61
11	15.61	15.61
12	31.59	31.59
13	0	0
14	0	0
15	31.59	31.59
16	15.61	15.61
17	15.61	15.61
18	NC	NC
19	0	0
20	0.03	0.03
21	5.06	5.06
22	5.06	5.06
23	3.24	3.23
24	0	0
25	3.15	3.15
26	3.15	3.15
27	3.15	3.15
28	3.24	3.23
29	1.58	1.57
30	1.58	1.57
31	1.58	1.57
32	1.58	1.57
33	26.3	26.3
34	26.3	26.3
35	31.58	31.57
36	31.58	31.57

MODE / PIN NO.	STOP	PLAY
22	5.02	5.02
23	3.25	3.24
24	0	0
25	3.15	3.15
26	3.15	3.15
27	3.15	3.15
28	3.24	3.23
29	1.58	1.57
30	1.58	1.57
31	1.58	1.57
32	1.58	1.57
33	26.32	26.31
34	26.32	26.31
35	31.58	31.57
36	31.58	31.57
IC730		
1	0	0
2	15.6	15.6
3	15.6	15.6
4	31.59	31.58
5	0	0
6	0	0
7	31.59	31.58
8	15.62	15.62
9	15.62	15.62
10	15.61	15.61
11	15.61	15.61
12	31.59	31.59
13	0	0
14	0	0
15	31.59	31.59
16	15.61	15.61
17	15.61	15.61
18	NC	NC
19	0	0
20	0.02	0.02
21	5.02	5.02
22	5.02	5.02
23	3.24	3.23
24	0	0
25	3.15	3.15
26	3.15	3.15
27	3.15	3.15
28	3.24	3.23
29	1.58	1.57
30	1.58	1.57
31	1.58	1.57
32	1.58	1.57
33	26.3	26.3
34	26.3	26.3
35	31.58	31.57
36	31.58	31.57
IC750		
1	0	0
2	15.6	15.6

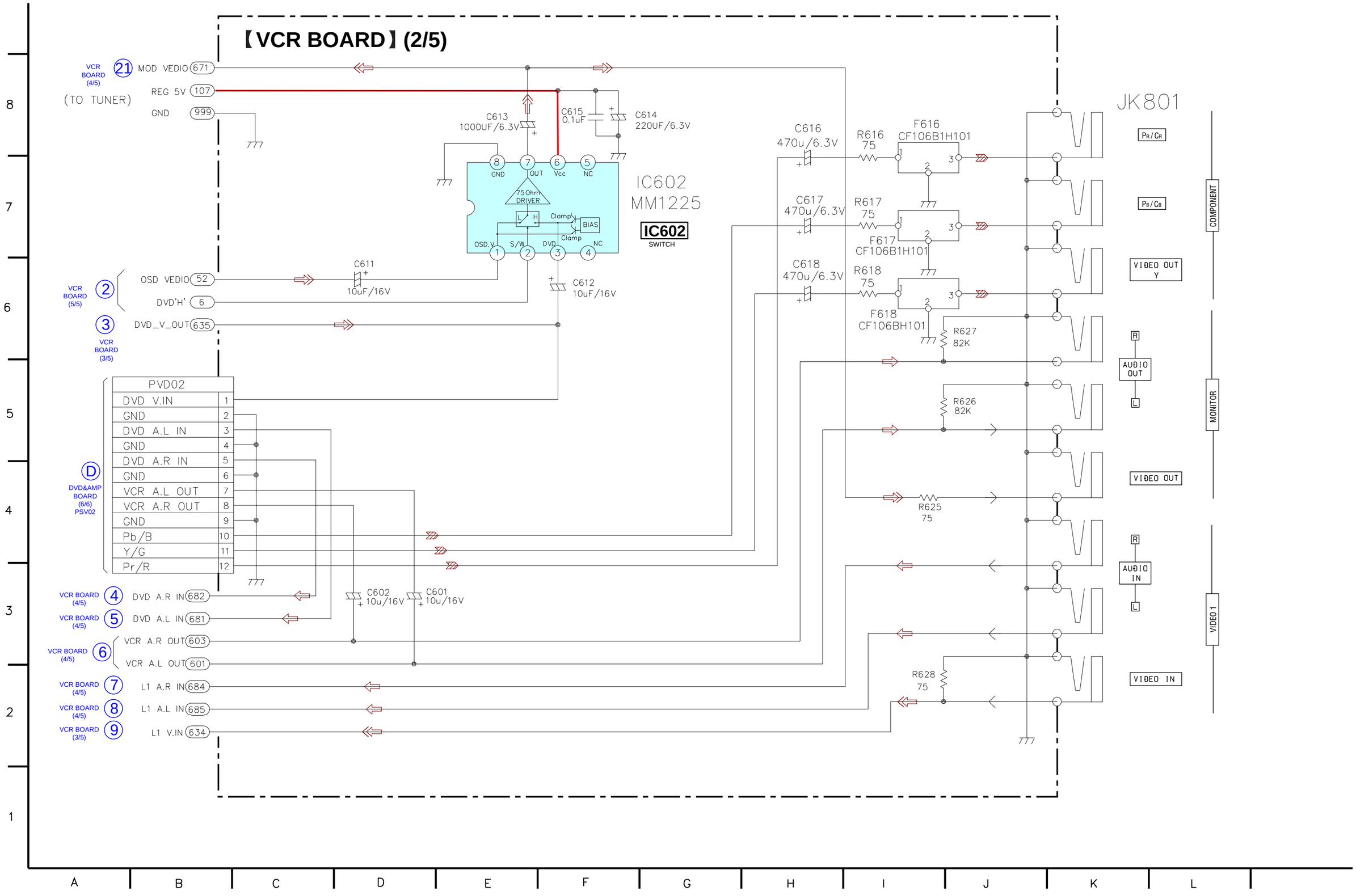
MODE / PIN NO.	STOP	PLAY
3	15.6	15.6
4	31.59	31.58
5	0	0
6	0	0
7	31.59	31.58
8	15.62	15.62
9	15.62	15.62
10	15.61	15.61
11	15.61	15.61
12	31.59	31.59
13	0	0
14	0	0
15	31.59	31.59
16	15.61	15.61
17	15.61	15.61
18	NC	NC
19	0	0
20	0.03	0.03
21	5.06	5.06
22	5.06	5.06
23	3.24	3.23
24	0	0
25	3.15	3.15
26	3.15	3.15
27	3.15	3.15
28	3.24	3.23
29	1.58	1.57
30	1.58	1.57
31	1.58	1.57
32	1.58	1.57
33	26.3	26.3
34	26.3	26.3
35	31.58	31.57
36	31.58	31.57

SECTION	NO	STOP			PLAY		
		B	E	C	B	E	C
DVD&AMP	Q401	5.2	5.19	0	5.2	5.19	0
	Q402	0	0	0	0	0	0.22
	Q403	5.08	0	0	4.93	0	0
	Q404	5.01	5.08	0	4.96	5.02	0
	Q405	5.01	5.08	0.44	3.32	4.01	1.9
	Q407	0	0	5.2	0	0	0
	Q408	2.85	0	0	2.83	0	0
	Q410	5.2	5.2	0	0	5.2	0
	Q411	0	0	5.2	0	0	5.19

5-17. SCHEMATIC DIAGRAM – POWER (SMPS) SECTION –

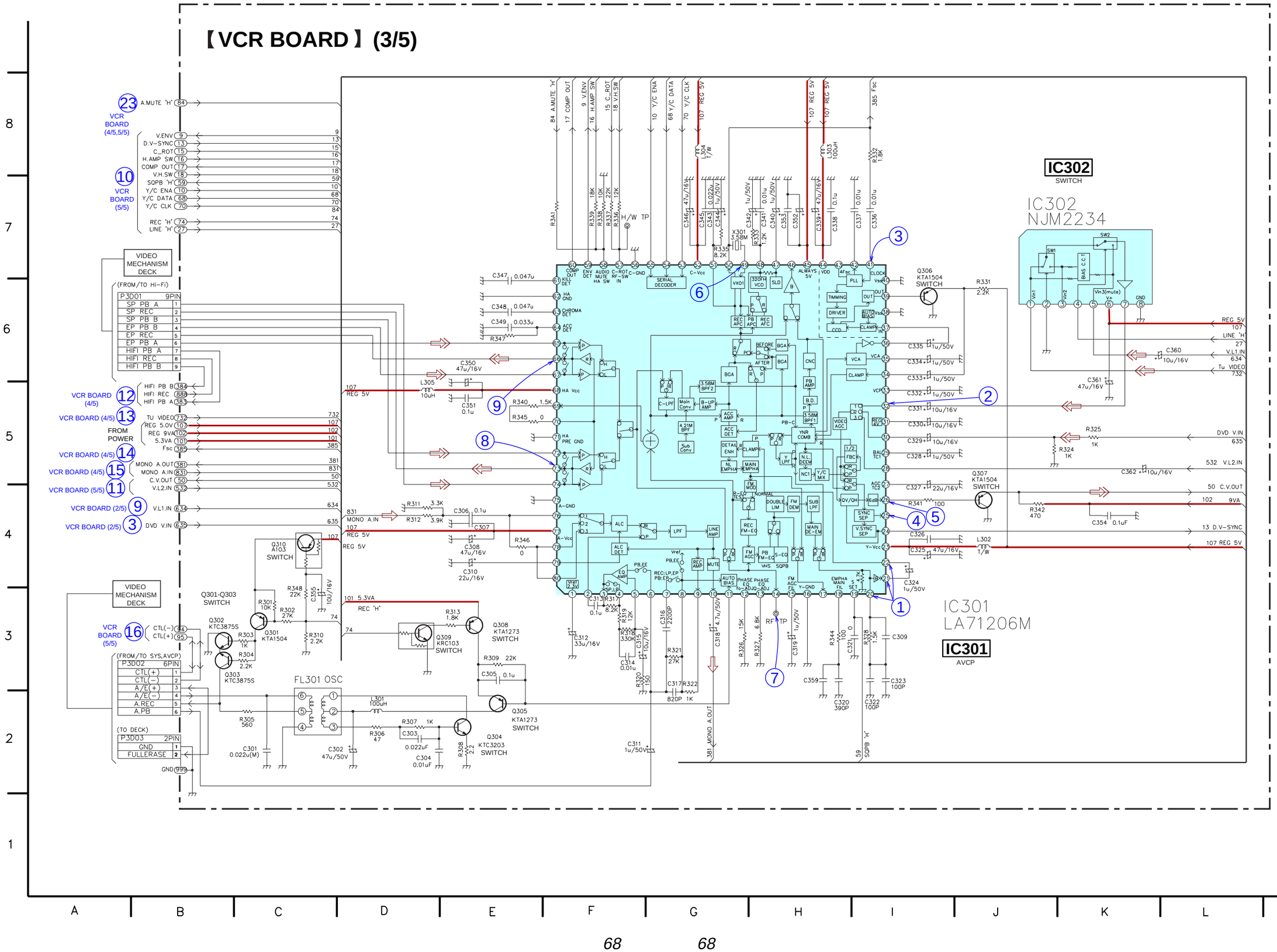


5-18. SCHEMATIC DIAGRAM – JACK, TUNER SECTION –

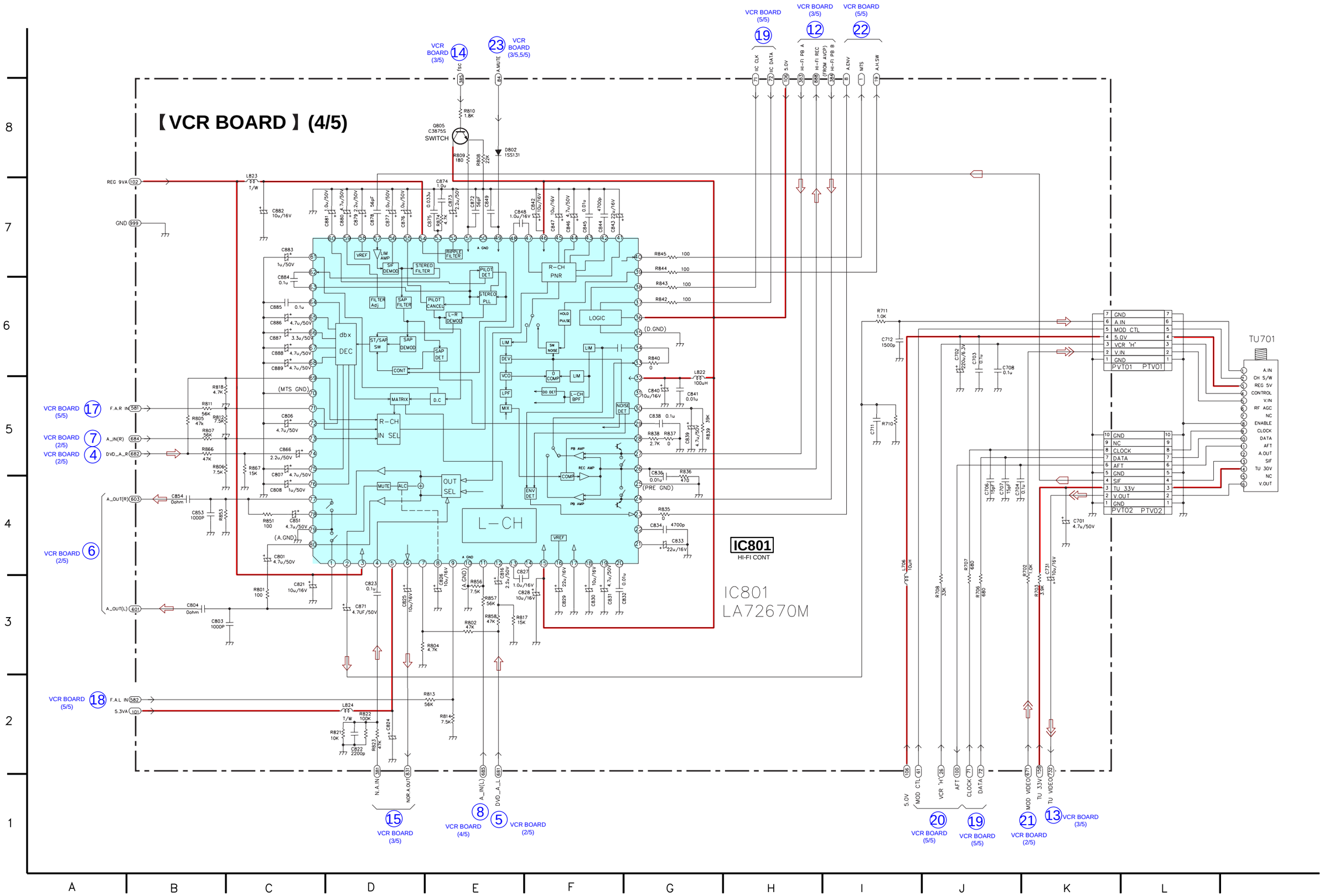


5-19. SCHEMATIC DIAGRAM – A/V SECTION –

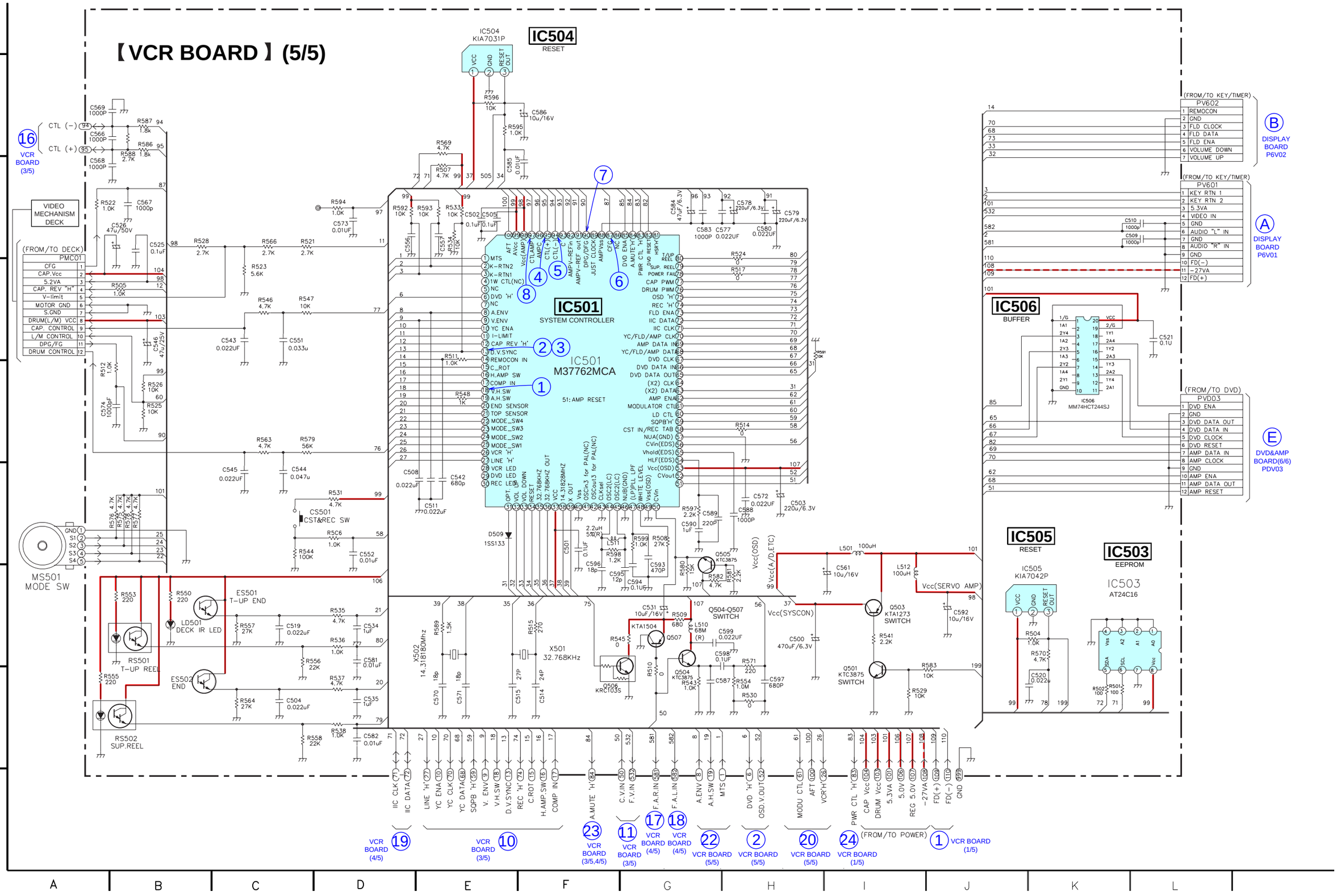
【VCR BOARD】(3/5)


IC302
SWITCH
IC302
NJM2234
IC301
LA71206M
IC301
AVCP
Q306 KTA1504 SWITCH
Q307 KTA1504 SWITCH
Q310 A103 SWITCH
Q301-Q303 SWITCH
Q302 KTC3875S
Q303 KTC3875S
Q301 KTA1504
Q304 KTC3203 SWITCH
Q305 KTA1273 SWITCH
Q308 KTA1273 SWITCH
Q309 KRC103 SWITCH
VIDEO MECHANISM DECK
(FROM/TO Hi-Fi)
P3D01 9PIN
SP PB A 1
SP REC 2
SP PB B 3
EP PB B 4
EP REC 5
EP PB A 6
HIFI PB A 7
HIFI REC 8
HIFI PB B 9
(FROM/TO SYS,AVCP)
P3D02 6PIN
CTL(+) 1
CTL(–) 2
A/E(+) 3
A/E(–) 4
A.REC 5
A.PB 6
(TO DECK)
P3D03 2PIN
GND 1
FULLERASE 2
FROM POWER
FL301 OSC
H/W TP
RF TP
SERIAL DECODER
320FH VCO
REC APC
PB APC
REC AFC
BEFORE
AFTER
BGA
C-LPF
Main Conv
B-UP AMP
3.58M BPF2
4.21M BPF
Sub Conv
ACC AMP
ACC DET
DETAIL ENH
NL EMPHA
MAIN EMPHA
YNR COMB
N.L. DEEM
Y/C MIX
FM MOD
NORMAL
DOUBLE LIM
FM DEM
SUB LPF
MAIN DE-EM
REC FM-EQ
PB FM-EQ
S-EQ
VHS SQPB
ALC
ALC DET
LPF
LINE AMP
REC AMP
MUTE
EQ AMP
AUTO BIAS
PHASE EQ ADJ
FM AGC
EMPHA MAIN FIL
S SET
PLL
TIMMING
DRIVER
CCD
CLAMP
VCA
PB AMP
B.D.
VIDEO AGC
SYNC SEP
V.SYNC SEP
FBC
ACC TC1
ACC TC2
BAL TC1
SW1
SW2
BIAS C.C.T.
Vin3(mute)
GND
REG 5V
LINE "H"
V.L1.IN
TU VIDEO
DVD V.IN
V.L2.IN
C.V.OUT
V.VA
D.V–SYNC
MONO A.OUT
SQPB "H"
MONO A.IN
REC "H"
A.MUTE "H"
V.ENV
C_ROT
H.AMP SW
COMP OUT
V.H.SW
Y/C ENA
Y/C DATA
Y/C CLK
Fsc
5.3VA
REG 9VA
REG 5.0V
FULLERASE
GND
R331 2.2K
R332 1.8K
R333 18K
R334 22K
R335 22K
R336 12K
R339 18K
R340 1.5K
R345 0
R346 0
R347
R348 22K
R301 10K
R302 27K
R303 1K
R304 2.2K
R305 560
R306 47
R307 1K
R308 2.2
R309 22K
R310 2.2K
R311 3.3K
R312 3.9K
R313 1.8K
R314 8.2K
R315 12K
R316 330
R317 8.2K
R318 330
R319 12K
R320 150
R321 27K
R322 1K
R324 1K
R325 1K
R326 15K
R327 6.8K
R328 1.5K
R341 100
R342 470
R343 100
R344 100
X301 3.58M
L301 100uH
L302 1/W
L304 1/W
L305 10uH
C301 0.022u(M)
C302 47u/50V
C303 0.022uF
C304 0.01uF
C305 0.1u
C306 0.1u
C307
C308 47u/16V
C309
C310 22u/16V
C311 1u/50V
C312 33u/16V
C314 0.01u
C315 10u/16V
C316 2200P
C317 820P
C318 4.7u/50V
C319 1u/50V
C320 390P
C321
C322 100P
C323 100P
C324 1u/50V
C325 47u/16V
C326
C327 22u/16V
C328 1u/50V
C329 10u/16V
C330 10u/16V
C331 10u/16V
C332 1u/50V
C333 1u/50V
C334 1u/50V
C335 1u/50V
C336 0.01u
C337 0.01u
C338 0.1u
C339 47u/16V
C340 1u/50V
C341 0.01u
C342 1u/50V
C343 1u/50V
C344 1u/50V
C345 0.022u
C346 47u/16V
C347 0.047u
C348 0.047u
C349 0.033u
C350 47u/16V
C351 0.1u
C352
C353
C354 0.1uF
C355 10u/16V
C359
C360 10u/16V
C361 47u/16V
C362 10u/16V
R3A1
R3A2
R3A3
R3A4
R3A5
R3A6
R3A7
R3A8
R3A9
R3A10
R3A11
R3A12
R3A13
R3A14
R3A15
R3A16
R3A17
R3A18
R3A19
R3A20
R3A21
R3A22
R3A23
R3A24
R3A25
R3A26
R3A27
R3A28
R3A29
R3A30
R3A31
R3A32
R3A33
R3A34
R3A35
R3A36
R3A37
R3A38
R3A39
R3A40

5-20. SCHEMATIC DIAGRAM – HI-FI SECTION –



5-21. SCHEMATIC DIAGRAM – SYSTEM SECTION –



• VOLTAGE CHART (VCR BOARD)

MODE / PIN NO.	EE	PLAY
	IC301	
1	2.3	2.31
2	2.29	2.28
3	2.29	2.28
4	2.29	2.28
5	2.31	2.29
6	2.3	2.31
7	0	2.31
8	2.31	2.32
9	2.31	2.31
10	2.25	2.27
11	4.93	4.93
12	1	1
13	0.97	0.97
14	1.92	1.89
15	1.55	1.53
16	0	0
17	2.37	2.55
18	2.39	1.45
19	0	0
20	2.46	2.49
21	1.73	1.79
22	3.07	2.29
23	4.96	4.95
24	0	0
25	0.36	0.35
26	1.83	1.87
27	1.47	1.6
28	2.25	2.56
29	2.32	2.31
30	2.25	2.26
31	4.08	4.08
32	2.25	2.26
33	3.62	2.8
34	2.97	2.93
35	3.13	3.14
36	2.37	2.37
37	2.35	2.29
38	0	0
39	1.82	1.87
40	0	0
41	0.83	0.83
42	2.34	2.37
43	0	0
44	4.92	4.92
45	4.95	4.95
46	2.27	3.17
47	3.31	3.31
48	3.32	3.32
49	3.94	3.94
50	2.54	2.55
51	2.12	2.09
52	4.95	4.95
53	4.75	4.62
54	4.7	4.52

MODE / PIN NO.	EE	PLAY
55	0.68	0.93
56	0	0
57	0	2.56
58	0	1.61
59	0	2.9
60	4.91	0.94
61	2.92	1.94
62	0	0
63	3.96	3.98
64	1.76	1.72
65	1.84	1.85
66	1.84	1.86
67	1.84	1.86
68	4.93	4.93
69	0.18	0
70	0.15	0
71	0	0
72	1.82	0.71
73	1.82	0.71
74	1.82	0.71
75	0	0
76	2.3	2.3
77	4.96	4.96
78	2.3	2.3
79	0	0
80	2.3	2.3
IC302		
1	2.96	2.96
2	0	0
3	3.01	3
4	5.12	5.12
5	2.95	2.95
6	4.97	4.97
7	2.2	2.2
8	0	0
IC501		
1	0.97	0
2	5.17	5.17
3	5.17	5.16
4	0	0
5	0.5	0.54
6	0	0
7	0.4	0.42
8	0.19	4.06
9	0.29	3.91
10	0.68	0.99
11	0	3.42
12	0	0
13	0	0
14	4.78	4.78
15	0	2.57
16	0	0
17	0.68	0.43
18	2.56	2.57
19	2.57	2.57

MODE / PIN NO.	EE	PLAY
20	0	0
21	0.11	0.11
22	5.17	5.17
23	]5.17	5.17
24	5.17	5.17
25	0	0
26	5.13	5.13
27	5.13	5.17
28	5.13	5.13
29	0	0
30	0	0
31	0	0
32	0	0
33	0	0
34	5.15	5.15
35	1.52	1.51
36	1.43	1.44
37	5.15	5.15
38	2.19	2.18
39	2.28	2.27
40	0	0
41	0.51	0.55
42	0.26	0.55
43	0.26	0
44	2.35	2.34
45	2.41	2.41
46	0	0
47	1.29	0
48	0	0
49	0	0
50	1.88	1.99
51	0.53	0.57
52	1.88	1.98
53	4.96	4.95
54	2.03	2.03
55	2.6	1.92
56	1.96	2.05
57	0	0
58	0	0
59	0	0
60	2.57	2.58
61	0	4.28
62	0	0
63	0	0
64	0	0
65	0.97	0.86
66	2.38	0
67	5.07	5.07
68	4.7	4.45
69	5.02	4.97
70	4.75	4.61
71	5.17	5.17
72	5.17	5.17
73	0	0
74	0	0

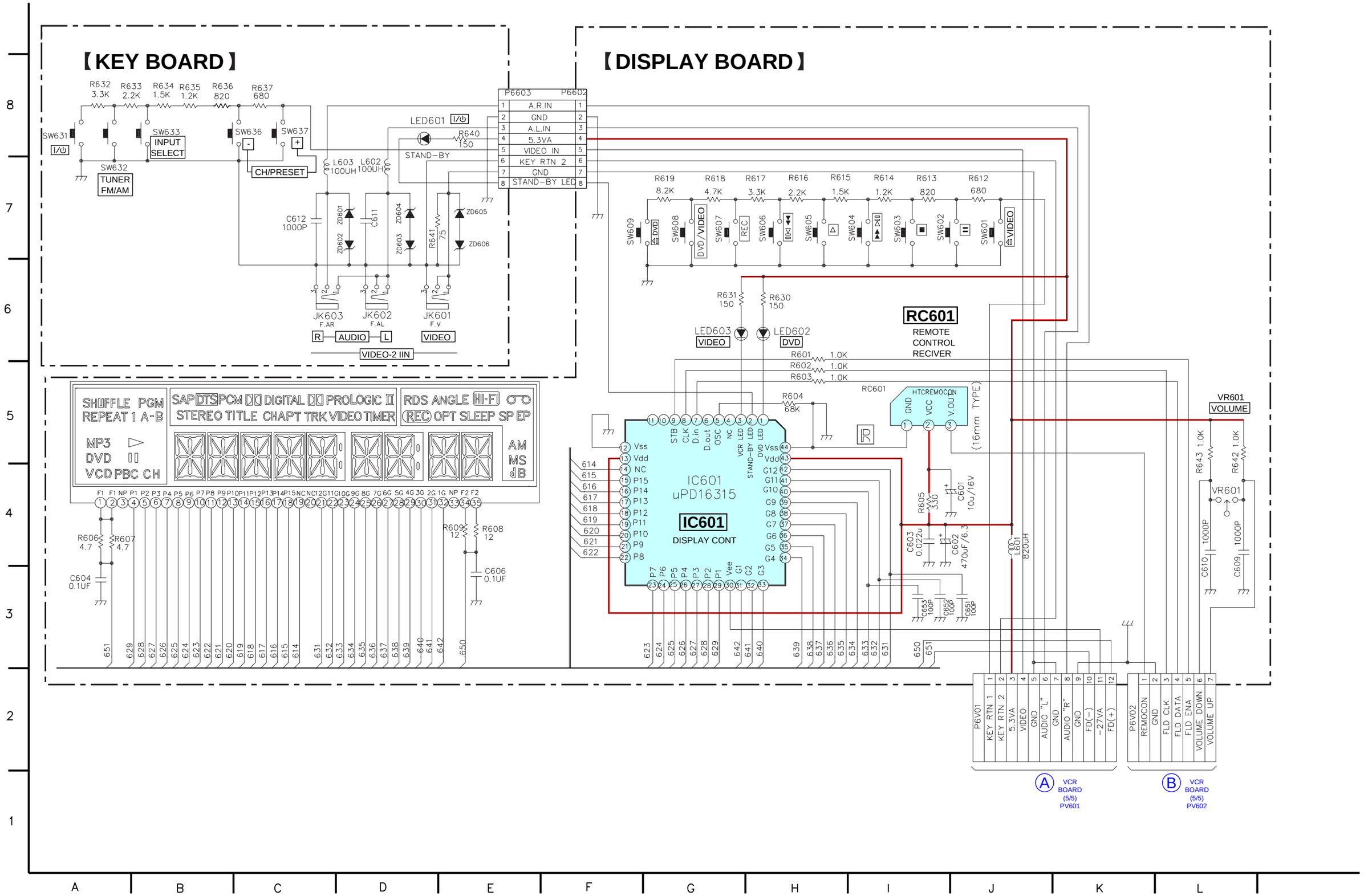
MODE / PIN NO.	EE	PLAY
75	0	0
76	0	1.79
77	0	2.72
78	0	4.76
79	0	0
80	0	0
81	0	0
82	4.94	4.94
83	5.03	4.98
84	0	0
85	2.69	2.67
86	0.58	0.68
87	0.17	2.36
88	0	0
89	0.54	0
90	0.1	1.36
91	2.53	2.54
92	2.54	2.53
93	0.21	0
94	2.5	2.49
95	2.5	2.49
96	2.52	2.52
97	2.52	2.52
98	5.08	5.08
99	5.17	5.17
100	2.64	1.95
IC504		
1	5.19	5.19
2	0	0
3	5.14	5.14
IC505		
1	5.19	5.19
2	0	0
3	4.7	4.7
IC602		
1	2.51	2
2	0	0
3	2.27	2.35
4	0	0
5	0	0
6	5.06	5.06
7	2.53	2.04
8	0	0
IC801		
1	0	0
2	2.56	2.54
3	9.21	9.18
4	2.48	2.48
5	5.19	5.19
6	1.91	2.07
7	0	0
8	0.29	1.31
9	0	0
10	0	0
11	0	0

MODE / PIN NO.	EE	PLAY
12	2.5	2.5
13	1.91	2.44
14	2.49	2.49
15	5.06	5.05
16	2.51	2.51
17	0	0
18	0	0.86
19	2.51	2.44
20	2.52	2.45
21	2.52	2.43
22	2.51	2.42
23	0.19	3.66
24	2.25	2.3
25	0	0
26	2.24	2.3
27	2.25	2.3
28	0	0
29	2.48	0.11
30	0	1.34
31	2.51	3.79
32	5.02	5.01
33	2.64	2.65
34	2.64	2.64
35	0	0
36	5.06	5.05
37	5.17	5.05
38	5.17	5.17
39	0	2.57
40	0.19	0
41	2.52	2.45
42	2.51	2.43
43	2.52	2.45
44	2.52	2.45
45	0	0.25
46	5.06	5.05
47	2.49	2.49
48	1.9	2.42
49	0	0
50	0	0
51	2.05	2.06
52	1.22	0
53	3.86	0.25
54	9.2	9.19
55	6.26	0.28
56	1.96	0.29
57	2.2	2.15
58	4.56	0
59	2.52	2.35
60	3.86	0.23
61	3.15	0.24
62	4.02	0
63	3.83	0
64	2.45	0
65	3.87	0.32
66	4.09	0.32

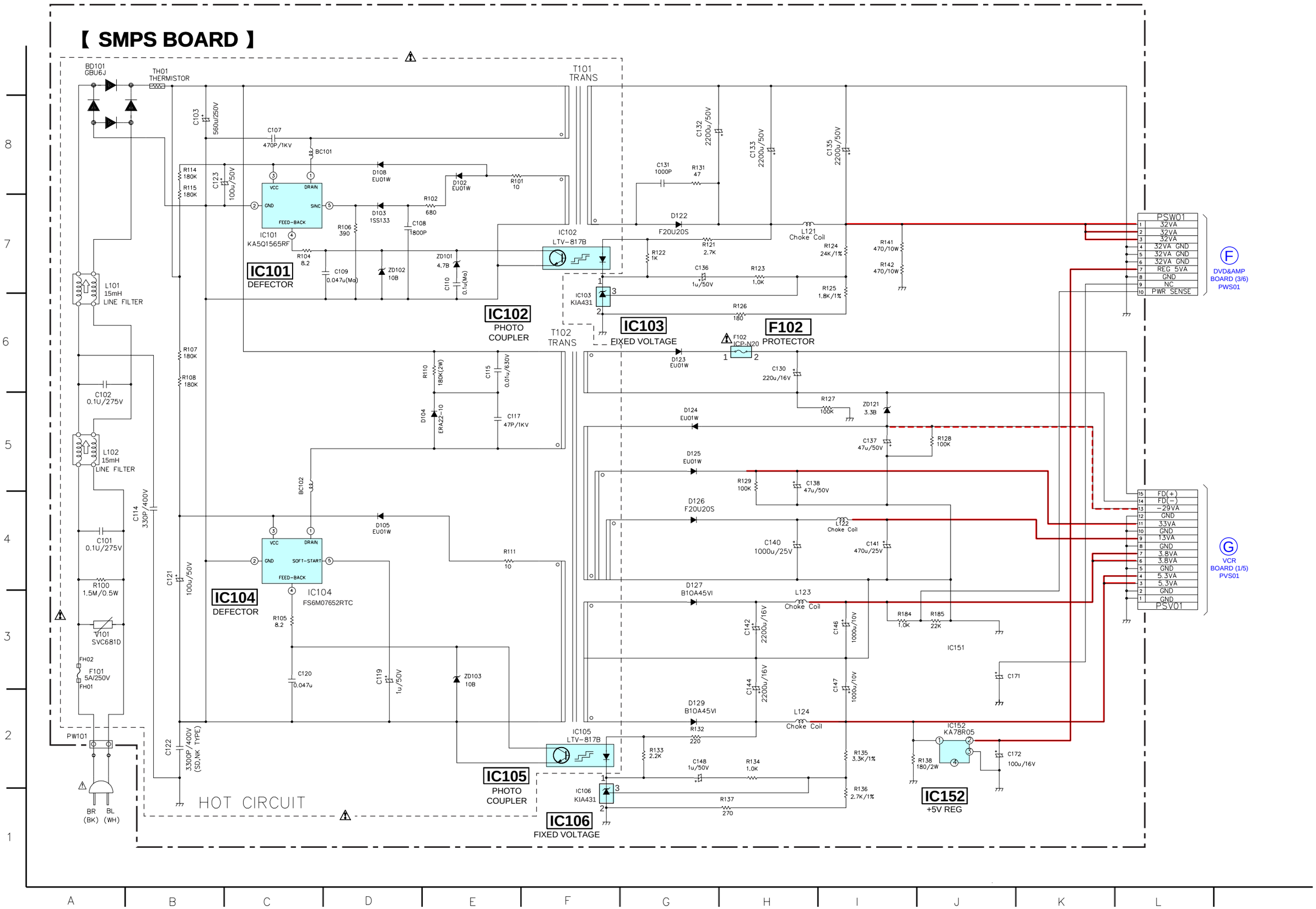
MODE / PIN NO.	EE	PLAY
67	3.88	0.31
68	3.94	0.31
69	0	0
70	0	0
71	0	0
72	3.86	0.31
73	0	0
74	2.5	2.5
75	3.87	0.4
76	3.17	0.22
77	0	0
78	4.42	4.3
79	0	0
80	4.4	4.3

Location No.	Base		Emitter		Collector	
	EE	PB	EE	PB	EE	PB
Q301	4.26	4.26	4.97	4.96	4.907	4.91
Q302	0.758	1.74	0	0	0	0
Q303	0.734	0.72	0	0	0	0
Q304	0	0	0	0	0	0
Q305	4.92	4.92	4.94	4.93	0	0
Q306	1.828	1.86	2.45	2.5	0	0
Q307	1.843	2.05	2.51	2.62	0	0
Q308	5.19	5.19	4.87	4.91	4.93	4.92
Q309	0	0	0	0	4.91	4.97
Q501	0.68	0.68	0	0	0	0
Q503	5.17	5.17	4.48	4.48	5.15	5.15
Q504	2.82	2.94	2.18	2.27	4.95	4.95
Q505	1.58	1.58	1.03	2.24	4.96	4.96
Q506	5.07	0	0	0	0	3.29
Q507	2.8	2.6	0	3.23	0	0
Q805	2.56	2.56	2.08	2.08	5.06	5.05

5-23. SCHEMATIC DIAGRAM – DISPLAY/KEY SECTION –



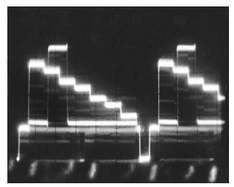
5-25. SCHEMATIC DIAGRAM – SMPS SECTION –



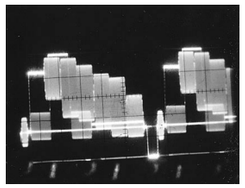
AVD-K600P

- **WAVEFORMS**

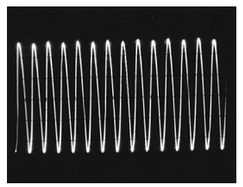
* IC301 (VCR BOARD)

① 

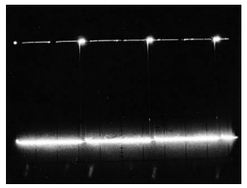
IC301 Pins 20, 21, 22
100mV/10msec DIV
VV/EE
20 Main DE Emphasis Filter
21 Main DE Emphasis out
22 Clamp in

② 

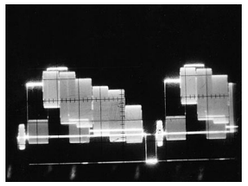
IC301 Pin 32
200mV/10msec DIV
EE
(VIDEO IN)

③ 

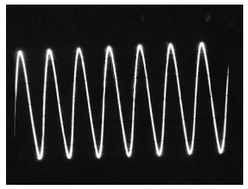
IC301 Pin 41
100mV/0.2msec DIV
REC/PB
(2fsc)

④ 

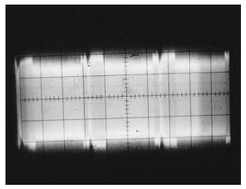
IC301 Pin 25
1.0V/20msec DIV
VV/EE
(C-SYNC OUT)

⑤ 

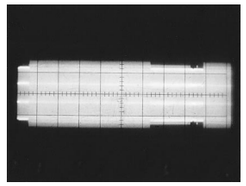
IC301 Pin 26
500mV/10msec DIV
EE
(VIDEO OUT)

⑥ 

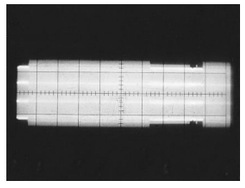
IC301 Pin 49
100mV/0.2msec DIV
PB/REC
(3.58MHz X-TAL IN)

⑦ 

IC301 Pin 14
100mV/5msec DIV
PB
(PB RF out)

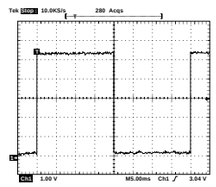
⑧ 

IC301 Pin 73
500mV/2msec DIV
SP REC
(REC RF)

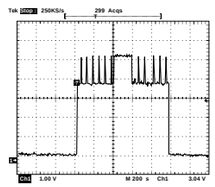
⑨ 

IC301 Pin 66
500mV/2msec DIV
EP REC
(REC RF)

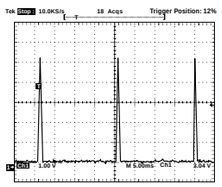
* IC501 (VCR BOARD)

① 

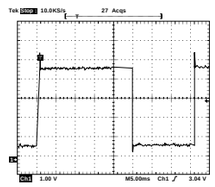
IC501 Pin 18
REC/PB

② 

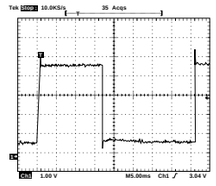
IC501 Pin 13
QUE/REV

③ 

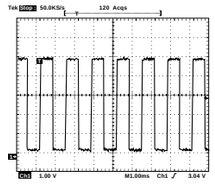
IC501 Pin 13
QUE/REV

④ 

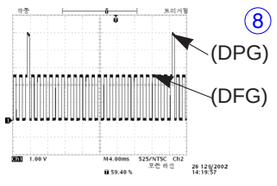
IC501 Pin 95
REC

⑤ 

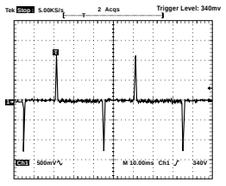
IC501 Pin 94
REC

⑥ 

IC501 Pin 87
REC/PB

⑦ 

IC501 Pin 90
REC/PB
(DPG/DFG)

⑧ 

IC501 Pin 97
PB
(CTL OUT)